TRAINING PROGRAMME EFFECTIVENESS AND ITS RELATIONSHIP TO INDIVIDUAL CHARACTERISTICS: A STUDY OF A WRITING AND STUDY SKILLS PROGRAMME

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ABSTRACT

Using Kirkpatrick's (1976) training evaluation model as the conceptual framework, the research upon which this thesis is based investigated the effectiveness of an essay writing skills programme, and the relationship of four characteristics of its participants to an effectiveness measure of post-programme performance.

Both Studies One and Two were based on university student samples. The size of these samples were sixty-seven and ten respectively. Study One adopted a quasi-experimental longitudinal design with a combination of before and after measurements of participants' essay writing performance, learning, self-efficacy and motivation to learn. Study Two used the repertory grid technique in a longitudinal manner by eliciting essay writing related grids from participants both before and after the programme.

The results from Study One indicated that there were increases in quantitative measures of participants' essay writing performance and learning, over the course of the programme. While there was no identified change in self-efficacy, this may have been due to methodological limitations. Initial performance, motivation to learn from the programme and levels of learning after the programme were also identified as three individual characteristics that were related to the effectiveness measure of post-programme performance. The results from Study Two indicated that there were qualitative changes in participants' essay writing related

constructs, and hence their essay writing attitudes, over the course of the programme.

These combined findings have practical importance, as they indicate that the programme was effective in terms of producing changes in participants' essay writing attitudes, learning and performance. The three individual characteristics of training programme effectiveness which were identified, also indicate the need for practitioners to consider such variables when developing and implementing training programmes. From a theoretical viewpoint, the findings also suggest that more research is needed regarding the relationship between individual characteristics and training programme effectiveness.

CHAPTER ONE

GENERAL INTRODUCTION

1.1. General Introduction

Training is a planned learning experience designed to bring about permanent change in an individual's knowledge, attitudes, or skills (Campbell, Dunnette, Lawler & Weick, 1970). For most individuals, training is instrumental for earning entry into the world of work and enjoying the satisfactions associated with it (Goldstein, 1989).

One issue that is particularly crucial and integral to the area of training is the effectiveness of training programmes and, in particular, the degree of training transfer that results from a particular programme. A basic aim of training is to maximise transfer to the real situation, that is, for persons to acquire skills which can be performed without the trainer's support in their natural setting (Patrick, 1992). Training transfer is a perennial problem though, because training is virtually always conducted in conditions different from the real target activity. In the United States, employers spend $30 billion on formal training and approximately $180 billion on informal

on the job training each year (Carnevale, Gainer & Villet, 1990). Despite such investments, researchers have long recognised the difficulty of achieving effective training (eg., Goldstein, 1986; Mosel, 1957). This is most apparent in light of estimates that only ten percent of the dollars spent on training results in actual behavioural change back on trainees' jobs (Georgenson, 1982). Clearly the skills so carefully shaped during training often do not survive the transition to the workplace (Marx, 1986). As a result, the investigation of training programme effectiveness is of utmost concern for both training researchers and practitioners.

Recent reviews of the training literature (eg., Baldwin & Ford, 1988) indicate that the issue of training programme effectiveness has seldom received the attention it deserves. Several researchers have stated that the existing literature in the area offers little of value to trainers (eg., Wexley, 1984). However, although recent reviews of training programme effectiveness have been quite critical, they have also been useful in identifying the various issues associated with current research in the area. Baldwin and Ford (1988) for example, argue that examination of training programme effectiveness issues requires a clear identification of the factors that are related to it. Clearly there are many different considerations that impact on the efficiency with which trainees can be moved from an initial lack of competence to a final level of acceptable performance. Baldwin and Ford (1988) though, have developed an organising framework outlining the general factors they believe are related to training programme effectiveness. The three categories of 'training programme effectiveness factors' that they

propose are the training design, characteristics of the trainees, and work-environment factors.

Although each of these training programme effectiveness factors is arguably just as important as the others, it is just one of these categories, the relationship of trainee characteristics to training programme effectiveness, that this thesis will attempt to investigate. These trainee characteristics consist of an individual's ability or skill, motivational factors, and personality factors (Baldwin & Ford, 1988; Noe, 1986).

The next chapter of this thesis focuses on recent literature within the area of training programme effectiveness research; particularly research regarding the relationship of individual characteristics to training programme effectiveness. The third chapter presents the rationale for the present study and includes the theoretical basis of the research, the choice of location for the study, and its objectives and hypotheses. This is followed by two chapters each of which deals with one of the two studies that comprise this research project. Finally, the sixth chapter consists of a general discussion and conclusions from both studies.

CHAPTER TWO

LITERATURE REVIEW

This chapter is divided into five sections. The first section outlines the most frequently used framework for categorising training criteria; Kirkpatrick's (1976) model of training evaluation. The second section focuses on recent literature regarding the relationship of individual characteristics to training programme effectiveness. This is followed by a section which presents three theoretical models of the relationship of individual characteristics to training programme effectiveness. The fourth section focuses on literature regarding the relationship of four specific individual characteristics to training programme effectiveness; initial performance, motivation to learn, self-efficacy and training programme learning. Finally, the fifth section provides a critique of current research regarding the relationship of individual characteristics to training programme effectiveness.

2.1. Kirkpatrick's (1976) Model of Training Evaluation

There are a number of different training evaluation models that can be utilised when assessing the effectiveness of a training programme (see Phillips, 1991). Each model evaluates different effects of training and provides different criteria by which a programme can be judged. It is not a matter of which model is correct, but rather which one is relevant to the objective of the evaluation.

Kirkpatrick's (1976) training evaluation model remains the prevalent framework for categorising training criteria (Phillips, 1991; Tannenbaum & Yukl, 1992) and a number of studies have provided support for the validity and utility of the model (eg., Latham, Wexley & Purcell, 1975). Kirkpatrick's (1976) framework calls for four levels of evaluation, and answers four important questions. The four levels of evaluation are trainees' reactions to the programme content and programme process (reactions), trainees' knowledge and skill acquisition (learning), trainees' post-programme behaviour change (behaviour) and the effect on the organisation of the changes in trainees' behaviour (results). The four questions that these levels of evaluation answer are; were the trainees pleased with the programme, what did the trainees learn in the programme, did the trainees change their behaviour based on what was learned, and did the change in behaviour positively affect the organisation (Phillips, 1991)? The results level of evaluation is the most difficult, the least often done and yet the most valuable. Reaction evaluation is the easiest, the most frequently used method and yet the least useful. Kirkpatrick's (1976) learning and behaviour

levels lie in between on these three judgements of difficulty, frequency of use and usefulness (Sanderson, 1992).

While apparently unintended by Kirkpatrick (1976) himself when the model was proposed, a common, yet misinterpreted assumption that has become associated with the model, is that reactions lead to learning which leads to changes in job behaviour which leads to changes in results (Alliger & Janak, 1989). This mistaken assumption, and the fact that training evaluation is often a process that is loosely based upon this framework, has often led to disappointment with the validity and utility of Kirkpatrick's (1976) evaluation model. However, it appears that this disappointment with the model does not have to be the case (Phillips, 1991). When used effectively, with an accurate understanding of its assumptions, Kirkpatrick's (1976) conceptual framework appears to have the potential to provide a comprehensive evaluation process. It can be successfully employed to evaluate the effectiveness of training programmes and to investigate theoretical relationships in the training effectiveness area.

2.2. Individual Characteristics and Training Programme Effectiveness

For the most part, research on training programme effectiveness has been conducted within the framework of experimental psychology and has ignored the psychology of individual differences (Morrison, 1991). As far back as 1957, Cronbach called for the integration of these two realms of research. Since then, a number of researchers (eg., Campbell, 1988; Mathieu, Martineau & Tannenbaum, 1993) have noted the development of research regarding the relationship of individual characteristics to training programme effectiveness. For example, while trainee motivation has always been of practical interest, research interest in motivational issues as they pertain to training has only escalated during the last decade (eg., Latham, 1988; Noe, 1986). Recent research concerning the relationship of individual characteristics to training programme effectiveness has also begun to use a variety of different samples (from managers to university students), and training tasks (from interpersonal skills to time management) (Baldwin & Ford, 1988). In short, research on the relationship of individual characteristics to training programme effectiveness has expanded inquiry beyond the method or learning techniques used by any particular programme, and is beginning to consider the larger context within which training programmes reside (Mathieu et al., 1993).

Accurate prediction of individual differences in performance after the completion of training is crucial. As Noe and Schmitt (1986) point out, with the increasing demand for training and retraining activities resulting from technical advances and/or plant closings, it is imperative that more

attention be directed toward studying how individual influences are related to training programme effectiveness. Determining the specific individual characteristics that are related to the effectiveness of training is of utmost importance in order to understand how to increase the likelihood that behaviour change and performance improvement will result from participation in training programmes (Noe & Schmitt, 1986). While selection of trainees for training programmes on the basis of individual difference variables is not a viable option for many organisations, the identification of individual difference variables still has important implications for training programme effectiveness (Noe & Schmitt, 1986). Inter-individual differences are important in a practical sense as they determine the range of talent with which a training programme must cope (Ackerman & Kyllonen, 1991). One of the aims of training is to reduce the range of individual differences in performance and this in itself is dependent upon knowledge of individual differences in relevant trainee characteristics.

2.3. Theoretical Models of the Relationship of Individual Characteristics To Training Programme Effectiveness

Until recently, empirical investigations of the various individual characteristics that are related to training programme effectiveness have been quite limited (Baldwin & Ford, 1988), despite the wide variety of suggestions in the practitioner literature (eg., Robinson, 1984). In the last ten years however, Mathieu, Tannenbaum and Salas (1992), Mathieu et al. (1993) and Noe and Schmitt (1986), have all proposed, and empirically tested, models of the relationship of individual characteristics to various training programme effectiveness measures. These three models have provided evidence that trainees' motivation to learn, self-efficacy judgements, achievement motivation, reactions to training, pre-training performance, and learning during training, are important individual characteristics that are related to the effectiveness of training programmes. These findings have been with regard to a number of training programme effectiveness measures, such as training reactions (eg., Mathieu et al., 1992; Tannenbaum, Mathieu, Salas & Cannon-Bowers, 1991), learning (eg., Baldwin, Magjuka & Loher, 1991; Mathieu et al., 1992), and post-training behavioural changes (Hicks & Klimoski, 1987; Mathieu et al., 1993). While quite fragmented in nature, it is these models that currently provide a theoretical perspective in the area, and support the proposition that certain individual characteristics are related to training programme effectiveness.

2.4. Four Individual Characteristics and the Training Programme Effectiveness Measure of Post-Training Performance

This section focuses on four particular individual characteristics that are hypothesised to be related to the training programme effectiveness measure of post-training performance; initial performance, motivation to learn, self-efficacy and programme learning. They are of particular interest for two reasons. First, researchers such as Mathieu et al. (1993) and Tubiana and Shakar (1982) have recommended further investigation into the relationship of these trainee characteristics to training programme effectiveness, as they feel that more theoretical progress can be made in this area. Second, it is important for both researchers and practitioners to know how strong the relationship is between ability-related variables and training programme effectiveness, in comparison with the relationship between motivational variables and training programme effectiveness. An individual's initial performance level and variables such as motivation to learn and self-efficacy provide the distinction between ability-related variables and motivational variables, and therefore provide a perspective on this issue.

2.4.1. Initial Performance and the Training Programme Effectiveness Measure of Post-Training Performance

Of some interest is the contribution that individuals' pre-training performance levels have in explaining the relationship of individual characteristics to training programme effectiveness. While many researchers have illustrated that trainees' initial levels of performance are predictive of training programme effectiveness measures such as post-training performance (eg., Crawford, Dancer & Pittenger, 1986; Gordon & Kleiman, 1976; Pace, Walters & Sherk, 1990; Robertson & Downs, 1979), no research has attempted to determine the relative contribution of this ability-related variable and other motivational variables. Consequently, the relative strength of the relationship that ability-related variables (eg., initial performance) and motivational variables (eg., motivation to learn) have with training programme effectiveness, appears to be a relevant area of research. The investigation of initial performance as a variable of interest would allow any initial performance differences to be controlled, thereby, isolating any variance in performance improvement during training. This would enable determination of whether motivational variables such as motivation to learn have an independent relationship to the training programme effectiveness measure of post-training performance.

2.4.2. Motivation to Learn and the Training Programme Effectiveness Measure of Post-Training Performance

Motivation to learn can be described as a specific desire on the part of the trainee to learn the content of the training programme (Noe & Schmitt, 1986). To date, there have been a number of proposals that motivation to learn is directly related to training programme effectiveness. A number of studies have attempted to identify a positive relationship between motivation to learn and the training programme effectiveness measure of learning after training. Some of these studies have found supporting evidence for such a relationship (eg., Hicks, 1984; Ryman & Biersner, 1975), while other studies have found conflicting evidence (eg., Mathieu et al., 1992; Noe & Schmitt, 1986). However, while a positive relationship between motivation to learn and the training programme effectiveness measure of post-training performance is plausible, no research to date has hypothesised or identified such a finding. As a result, the relationship between motivation to learn and the training programme effectiveness measure of post-training performance appears to be an issue that requires more research attention.

2.4.3. Self-Efficacy and the Training Programme Effectiveness Measure of Post-Training Performance

Campbell (1989) has advocated monitoring the variability and extent of self-efficacy before and after training. This effectively provides another measure of the effectiveness of a training programme, and is an important individual difference variable that should be taken into account when evaluating programmes (Latham, 1988). Derived from social cognitive theory, self-efficacy in the area of training refers to a trainee's perceived capability to perform a specific task (Gist, 1987). The study of self-efficacy is primarily concerned with how people judge their capabilities and how their percepts of self-efficacy affect their motivation and behaviour (Bandura, 1986).

A number of researchers have illustrated that individuals' levels of self-efficacy are related to training programme effectiveness. For example, Ford, Quinones, Sego and Sorra (1992), Gist, Schwoerer and Rosen (1989), Gist, Stevens and Bavetta (1991) and Mathieu et al. (1993) all report that high levels of self-efficacy at the conclusion of training tend to be positively related to post-training performance measures. These findings apply to a variety of training programmes, such as computer software training and interpersonal skills training. In short, this research suggests that self-efficacy after training is related to post-training performance.

2.4.4. Programme Learning and the Training Programme Effectiveness Measure of Post-Training Performance

A common proposal is that training outcomes of learning and retention are positively related to post-training performance. That is, for trained skills to transfer, training material must be learned and retained (Kirkpatrick, 1976). Transfer of training occurs whenever the effects of prior learning influence the performance of a later activity (Holding, 1991). For transfer to occur, learned behaviour must be generalised to the job context and maintained over a period of time on the job (Baldwin & Ford, 1988).

The models of Mathieu et al. (1992) and Noe and Schmitt (1986) propose that trainees' learning is positively related to their post-training performance. The proposition that training outcomes of learning are positively related to behaviour change also supports the ideas of Ackerman (1987) and Anderson (1982), that development of a foundation of verbally based, task-relevant knowledge is a necessary but not sufficient condition for higher order skill development. In addition, Goldstein (1991) derived a transfer climate model that also recognises that the amount of learning obtained by a trainee is an important precursor to transfer. Clearly then, individuals' levels of learning after training have a central and critical relationship to post-training performance.

2.5. Critique of the Research Literature

A review of the literature regarding the relationship of individual characteristics to training programme effectiveness, indicates a number of weaknesses in this area to date. These weaknesses effectively reduce the usefulness of the research for understanding the individual characteristics that are related to training programme effectiveness. First, there is some confusion regarding definitions and terminology. The distinction between the terms *evaluation* and *effectiveness* is particularly relevant to this thesis. As Kraiger, Ford and Salas (1993) point out, the phrases *training evaluation* and *training effectiveness* have often been used interchangeably, yet each addresses very different research questions. Training evaluation refers to a system for measuring whether trainees' have achieved learning outcomes. It is concerned with issues of measurement and design, the accomplishment of learning objectives, and the attainment of requisite knowledge and skills. In contrast, training effectiveness models seek to explicate why training did or did not achieve its intended outcomes. This objective is accomplished by identifying and measuring the relationship of individual, organisational, and training-related factors to training outcomes such as learning and transfer of training. Issues of transfer of training and training effectiveness are necessarily broader than issues of training evaluation.

Another major weakness of research regarding the relationship of individual characteristics to training programme effectiveness relates to the narrow and specific methodology that is frequently employed. Too often the sampling and the context of the research are too specific and narrow to

enable any useful comparisons to be made between various studies. In addition, the frequent failure to use a control group means the results of many studies could be explained by alternative explanations. As a result, there is currently a fragmented nature to the studies in this area. While this is understandable and to some degree unavoidable, it does limit the generalisability and coherency of the existing research findings.

Two additional weaknesses regarding existing research in this area have been identified by Baldwin and Ford (1988). First, there is a lack of coherent theoretical frameworks to guide research in the area. Despite the recent identification of a number of individual characteristics that are related to training programme effectiveness, the lack of a systematic approach to this area has resulted in minimal improvements in our understanding of the process. It is clear then, that systematic research is needed in which models are developed, tested and revised on the basis of empirical research. Second, there is a lack of adequate criterion measures of training programme effectiveness in these studies. For example, frequently used self-report measures of behaviour (eg., Wexley & Baldwin, 1986) are not adequate for determining the relationship of individual characteristics to training programme effectiveness. Criterion measures that are valid, reliable, objective and relevant are needed to provide clear and unambiguous results that are amenable to interpretation.

This critical review of the existing literature, reveals that the current definitions, the research contexts, the lack of a theoretical framework and the criterion measures used, limit our understanding of the relationship of

individual characteristics to training programme effectiveness. These are clearly the research areas that need to be addressed in order to improve our current understanding of this area.

CHAPTER THREE

RATIONALE

This chapter deals with the rationale for the present research and includes the methodological and theoretical justifications of the research, the choice of the location for the study, and the objectives and hypotheses of the study.

3.1. Introduction

Considered together, the models of Mathieu et al. (1992), Mathieu et al. (1993) and Noe and Schmitt (1986), provide some evidence for the hypothesis that the individual characteristics, initial performance, motivation to learn, self-efficacy after training and programme learning, have a relationship with the training programme effectiveness measure of post-training performance. It is these models that provide the theoretical framework for this study.

It was the theoretical propositions of these models and the availability of an appropriate programme, that determined the selection of a university writing and study skills programme as the basis of this study. Obviously a university writing and study skills programme is significantly different from the typical training programme that may operate in industry. As a result, some compromises are inevitable in terms of the generalisability of the results to industry based training. Despite this fact though, for a number of methodological reasons, this programme offers much potential as a means of investigating the relationship of various individual characteristics to training programme effectiveness.

First, the skill of writing itself is appropriate as it is a basic skill in many jobs in industry. As a result, there is some degree of generalisability to real world settings. Second, the skill of writing is a complex task which depends, in part, on skill acquisition processes. As a result, this writing and study skills programme enables assessment of effects over the course of learning (Kanfer & Ackerman, 1989). Third, because the programme attracts individuals of varying confidence and ability levels, it is suitable for studying the relationship of individual characteristics (such as self-efficacy after training) to training programme effectiveness. Fourth, a significant limitation of conducting research in most corporate training environments is the lack of objective, quantifiable criterion measures (Saari, Johnson, McLaughlin & Zimmerle, 1988), due to the complexity of such programmes. The particular programme chosen in this case reduces this problem somewhat as it has clearly identifiable objectives which are amenable to objective testing by quantifiable measures of essay writing ability. As a result, although the

generalisability to real world settings is not ideal in this situation, this setting does balance the competing demands of internal and external validity. It offers a stronger test of the hypothesised relationships than would most genuine real world settings by providing more protections against threats to internal and statistical conclusion validities (eg., differential mortality), yet still samples from an actual learning environment with real consequences.

In addition, a writing and study skills programme is also relevant theoretically as there has recently been a growing interest in the role of self-efficacy in students' academic learning and performance (eg., Bouffard-Bouchard, 1990; Corno, 1989; Schunk, 1989; Zimmerman & Schunk, 1989). Meier, McCarthy and Schmeck (1984) have demonstrated that students' assessments of their self-efficacy with regard to writing are a significant predictor of writing grades on actual compositions, with more efficacious individuals being better writers. The study of Meier et al. (1984) suggests that self-efficacy theory may provide a useful model for the assessment of one's expectations of competence in writing.

It was for these methodological and theoretical reasons then, that a university writing and study skills programme was selected as the basis of this study on training programme effectiveness.

3.2. The Writing and Study Skills Programme

The Writing and Study Skills Programme (WASS) was established by the University of Canterbury's English Department in 1981. Since then, enrolment numbers in the programme have increased from an initial number of 23 students to enrolment numbers of 419 in 1993, with students being referred by academic staff from almost all university departments. As a result, the programme has grown well beyond its original role as a remedial writing course for selected students. It now offers a university-wide service to help students acquire the academic skills they need for successful essay writing at the tertiary level.

The programme itself consists of five one-hour lectures, repeated at regular intervals, on writing at the tertiary level. Students enrol in the programme for a fee of $20 and may also obtain individual assistance of up to three hours. Approximately one quarter of the students attending the programme throughout the year do so during the June-July sessions.

It must be emphasised that the experience of the coordinator of the WASS programme has been that the majority of students who enrol are intelligent and well motivated. In other words, many seem to be potential 'A' students who are prepared to make an extra effort, rather than borderline students aspiring to a 'C'.

3.3. Justification for the Study

In effect, there was both a practical and a theoretical justification for this study of the WASS programme to be undertaken. The practical justification related to the determination of the overall effectiveness of the WASS programme with regard to its basic objectives. That is, whether it achieved its objective of improving students' essay writing performance, essay writing knowledge and essay writing self-efficacy. By attempting to determine this, this thesis was thought to be potentially useful for two practical reasons. First, despite the rapid growth and development of the WASS programme, its worth in terms of effecting significant changes in students' essay writing abilities was still largely anecdotal and was based upon subjective judgements. Second, the future funding and continuation of the WASS programme was quite uncertain. Empirical research that might illustrate the effectiveness of the programme would no doubt justify its past existence and might also consolidate its future operation as a valuable university-wide service.

With regard to this practical justification, it must be stressed that this study was not intended as a comprehensive evaluation of an existing programme as some researchers have previously accomplished (eg., Brook, 1982). If anything though, it was summative in nature, the primary purpose being to determine the degree to which learning and behaviour change resulted from the programme, and it used what Patrick (1992) calls 'the research approach'. The research approach refers to the use of the scientific method and is appropriate for evaluating the effectiveness of a programme

systematically. The study was an investigation of what Williamson, Prost and George (1978) call the 'general effectiveness' of a programme - the measurement of change, which is unrelated to any specific goals and is a first and minimal level of evaluation. The practical objective of this study then, was to determine if the basic aims of the WASS programme were being satisfied, with particular focus being placed on possible behavioural changes of its participants.

The theoretical justification for this study was more fundamental than the practical justification. In line with the plea of Baldwin and Ford (1988) for more research in which training models are tested and revised on the basis of empirical research, the theoretical objective of this study was to test the predictiveness of four individual characteristics of training programme effectiveness - initial performance, motivation to learn, self-efficacy after the programme and learning after the programme. The major emphasis of this part of the study was to investigate the relationship between these individual characteristics and the training programme effectiveness measure of final essay writing performance. Theoretically, the study was an attempt to test a proposed model of training programme effectiveness in the naturalistic context of the WASS programme.

3.4. The Research Strategy

The research consisted of two major parts which are reported in the balance of this thesis. Study One involved empirically testing the practical and theoretical propositions of interest by means of questionnaires and the collection of objective information in a longitudinal manner. Study Two used the repertory grid technique in a longitudinal manner, to collect attitudinal data from a small number of individuals enrolled in the WASS programme. Methodological details regarding these two studies are reported in chapters four and five.

3.5. Hypotheses for Study One

The hypotheses for Study One were derived from the theoretical models of Mathieu et al. (1992), Mathieu et al. (1993) and Noe and Schmitt (1986), and were based upon the temporal sequencing of the variables in the study. Details regarding the temporal sequencing of the variables can be found in section 4.2.3..

The particular hypotheses of Study One were:

1) Essay writing performance will increase more for those who participate in the WASS programme than for those who do not.
2) Essay writing learning will increase more for those who participate in the WASS programme than for those who do not.
3) Essay writing self-efficacy will increase more for those who participate in the WASS programme than for those who do not.
4) For those individuals who participate in the WASS programme, initial essay writing performance will be a significant positive predictor of final essay writing performance.
5) For those individuals who participate in the WASS programme, motivation to learn from the programme will be a significant positive predictor of final essay writing performance.
6) For those individuals who participate in the WASS programme, learning after the programme will be a significant positive predictor of final essay writing performance.
7) For those individuals who participate in the WASS programme, self-efficacy after the programme will be a significant positive predictor of final essay writing performance.

The relationships among the variables included in Hypotheses 4-7 are summarised in Figure 1. The model itself is based on the theoretical propositions and the temporal sequencing of variables in the study.

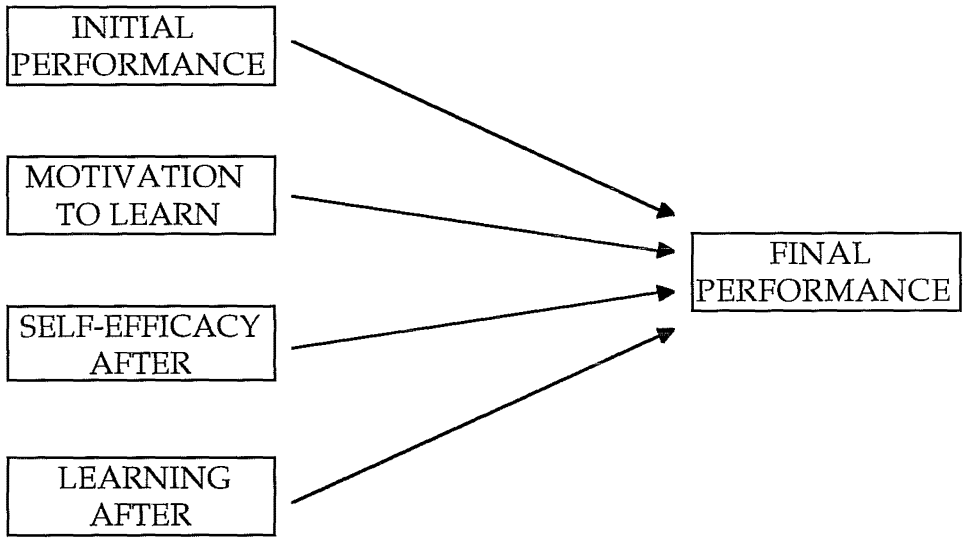

Figure 1: Hypothesised Theoretical Relationships for Study One.

3.6. Research Questions[1] of Study Two

The research questions of interest were:

a) What are the most salient constructs that subjects use to construe their essay writing, before and after the WASS programme?

b) Do subjects' construct systems change over the course of the WASS programme?

c) Do subjects 'overall' and 'ideal' perceptions of essay writing converge over the course of the WASS programme?

[1] Due to the theoretical and philosophical basis of the repertory grid technique, the use of general research questions is more appropriate than the proposition of specific hypotheses that are amenable to empirical testing. See Kelly (1955) for further information regarding the appropriateness of using research questions as opposed to specific hypotheses.

CHAPTER FOUR

STUDY ONE

This chapter is divided into four sections. The first section provides an introduction to Study One. The second section outlines the method of Study One and provides details about the subjects, measures and procedure. This is followed by a results section which tests both the effectiveness of the WASS programme and the hypothesised theoretical relationships. Finally, the fourth section provides a discussion of these results.

4.1. Introduction to Study One

Study One involved testing empirically the practical and theoretical hypotheses of interest, by means of questionnaires and the collection of objective information in a longitudinal manner. To test these hypotheses, there are a number of different training evaluation models that could have been utilised. Study One utilised Kirkpatrick's (1976) training evaluation model as it remains the prevalent framework for categorising training criteria (Phillips, 1991; Tannenbaum & Yukl, 1992) and a number of studies have provided support for it (eg., Latham, Wexley & Purcell, 1975). The four levels of this evaluation model are trainees' reactions to the programme

content and programme process (reactions), trainees' knowledge and skill acquisition (learning), trainees' post-programme behaviour change (behaviour) and the effect on the organisation of the changes in trainees' behaviour (results). Study One focused primarily on the second and third levels of this training evaluation model as learning and behaviour change are expected from well-designed and well-administered training programmes (Noe & Schmitt, 1986). In contrast, the reactions level of evaluation was given less focus, as the vast majority of research in the training area (eg., Alliger & Janak, 1989) suggests that trainees' reactions are not an effective measure of training programme effectiveness. As the results level of evaluation was felt to be inappropriate to the focus of this programme, it was not assessed at all.

Arguably, the most important question addressed by any programme evaluation is whether trainees have acquired the skills and knowledge for which the programme was developed (Robinson & Robinson, 1989). For this reason, data relating to programme learning were collected and analysed in this study. The decision to also track behavioural change after the WASS programme represented a decision to answer the question, "Are individuals using the skills and behaviours they have been taught?" The specific behavioural changes that were sought were improvements in individuals' essay writing performance. While trainees' reactions are a very 'soft' index of programme effectiveness (Patrick, 1992), such information can still be useful (Brook, 1982). As a result, data relating to trainees' reactions to the WASS programme were also collected and became part of the secondary analyses of this study.

4.2. Method

4.2.1. Subjects

Subjects were university students, enrolled in the WASS programme held between June-July 1994 at the University of Canterbury, who volunteered to participate in the study and gave their informed consent in a written form (see Appendix A). The total number of subjects was 76. However, nine subjects failed to complete all the measures and their data were excluded from the final analysis; leaving a sample of 67 subjects as the basis of this study.[2] The possibility of non-random sampling and/or differential mortality being a contaminant of results was discounted by obtaining demographic details for some of those students who chose not to participate in the study and all those students whose data were excluded from the final analysis. Table 1 shows the demographic details of the 67 treatment group subjects in Study One.

[2] Power analysis suggested that a sample size of 70 was required for the study to have a level of power of 0.80.

Table 1: The Demographic Details of the Treatment Group Subjects in Study One.

	Treatment Group Subjects (N = 67)			
Age (yrs)	Median = 23.06 S.D. = 7.64 Range = 18 - 48			
Gender	54 Females (80.6%) 13 Males (19.4%)			
Year at University	First year - 42 (62.7%) Second year - 22 (32.8%) Third year - 3 (4.5%)			
Highest Level of Education	Undergraduate degree - 2 (3%) Bursary - 45 (67.2%) School Certificate - 16 (23.8%) None of these - 4 (6.0%)			
Subjects Enrolled in at University	English	- 16 (32%)	Sociology	- 12 (24%)
	Education	- 11 (22%)	Psychology	- 10 (20%)
	French	- 7 (14%)	Art History	- 7 (14%)
	History	- 6 (12%)	American Studies	- 6 (12%)
	Economics	- 5 (10%)	Maori	- 4 (8%)
	Business Admin.	- 4 (8%)	Law	- 4 (8%)
	Philosophy	- 4 (8%)	Political Science	- 4 (8%)
Full-time/ Part-time Student	56 Full-time (83.6%) 11 Part-time (16.4%)			

While the age of the 67 treatment group subjects ranged from 18 to 48 years, subjects were predominantly between 18 and 22 years of age. The majority of these subjects were female, first year, full-time students, whose highest level of education was Bursary. The majority of them were enrolled in either English, Sociology, Education or Psychology.

A control group of 21 university students who did not attend the WASS programme also participated in Study One on a voluntary basis. As with the treatment group, informed consent was obtained from each of them in a written form (see Appendix A). Randomisation of subjects to the treatment and control group was not feasible in this study, as is the case in many evaluation studies, and no other similar comparison treatment groups were available. As a result, a quasi-experimental technique was used.

The control group of 21 students who had not attended the WASS programme were enrolled with the same university departments with which subjects in the treatment group were enrolled. An attempt was made to 'match' the control group as closely as possible with the treatment group with regard to variables such as age, gender and initial essay writing performance. As statistical testing revealed there were no significant differences between these two groups with regard to any of the demographics variables (see 4.3.2.1.), the control group provided a valuable measure of concurrent changes that may have occurred in the absence of the WASS programme and ruled out, with some degree of certainty, any competing explanations of the results. (See Appendix B for a comparison of demographic data between the treatment and control group subjects.)

4.2.2. Measures

Central to the whole process of evaluation is the formulation of valid, reliable and relevant criteria. Wexley (1989) acknowledges that there is also a pressing need for evaluating training programmes using scientific designs, unlike the current practice in many organisations where the evaluation consists merely of casual discussion amongst those involved. As Weiss (1972) points out though, it is not always possible to adopt rigorous quantitative evaluation approaches. As a result, the scientific evaluation should not be neglected, but some compromises must inevitably be made.

This study adopted a quasi-experimental longitudinal design with a combination of before and after measurements of the relevant variables and an untreated matched control group. The researcher selected those techniques and approaches that were most applicable to this situation, and which would rule out some alternative explanations for any theoretical relationships that might be found (eg., reverse causation and reciprocal causation). The use of a non-equivalent control group extended the research methodologies of Mathieu et al. (1992), Mathieu et al. (1993) and Noe and Schmitt (1986), who did not use a control group. It was hoped that as a result, any findings would be relatively unambiguous and amenable to interpretation.

4.2.2.1. Pilot Testing of Measures

Some of the measures were pilot tested during March-April 1994, prior to the major study itself. The results from this preliminary testing are outlined below. Descriptions of these measures and details regarding their construction can be found in section 4.2.2.2..

A ten item self-efficacy scale was pilot-tested on 48 individuals who participated in the WASS programme in March-April 1994. This testing occurred prior to the beginning of the WASS programme. The age and gender composition of these 48 individuals was similar to that of the subjects from the WASS programme held in June-July 1994. The scale initially had an alpha reliability of 0.76. This increased to 0.82 when four of the items were discarded due to low alpha reliability.

A single question designed to assess level of learning was pilot-tested on twelve individuals who participated in the WASS programme in March-April 1994. This testing occurred at the completion of the WASS programme, and revealed that the measure had an adequate ability to differentiate between levels of learning and provided an adequate range of learning scores. The inter-rater reliability of the scored responses was 0.83. This was considered to be sufficient for the use of the measure in the major part of the study.

A nine item programme reactions scale was pilot-tested on 104 individuals who participated in the WASS programme in March-April 1994. This testing occurred at the completion of the WASS programme. The age and gender composition of these 104 individuals was similar to that of the subjects from the WASS programme held in June-July 1994. The scale initially had an alpha reliability of 0.71. This increased to 0.77 when three of the items were discarded due to low alpha reliability.

4.2.2.2. Measures Used in Study One

Measures of essay writing performance, learning and self-efficacy were used in Study One, along with measures of motivation to learn from the programme and programme reactions.

Essay Writing Performance

Data relating to both essay writing performance before the WASS programme (initial essay writing performance) and essay writing performance after the programme (final essay writing performance) were collected. This was measured by subjects' marks on university essays they wrote during the year. Essay marks were used as the measure of performance as the essay assignment has for many years provided the most used, and most important, medium for the summative evaluation of student learning (Biggs, 1988). Grades achieved by the trainee are also a common measure of programme effectiveness (eg., Asher & Sciarrino, 1974; Gordon & Kleiman, 1976; Tziner & Falbe, 1993).

Initial essay writing performance was measured by the marks of essays subjects completed before the WASS programme. This was effectively the most recent indicator of essay writing achievement. Final essay writing performance was measured by the marks of essays subjects completed after the WASS programme. All these essay marks were obtained as percentages from subjects' respective departments after permission had been gained to do so. As there is evidence (Elley, Barham, Lamb & Wyllie, 1979) that the reliability of essay marking can be increased from 0.71 when using one essay and one marker to 0.91 when using three essays and one marker, essay marks were averaged for those students who had more than one essay mark available.

While it was possible to test individuals' post-programme performance by means of a direct essay writing assessment (eg., Huczynski & Lewis (1980), this was felt to be inappropriate for a short programme of this nature. It was also thought that a direct assessment of essay writing would not accurately measure the particular skills taught in this programme.

Learning

Learning was assessed by an open-ended question which measured the amount of knowledge that individuals acquired from that which was presented in the WASS programme (see Appendix A). This learning measure was used to assess subjects' essay writing knowledge prior to (learning before) and after the WASS programme (learning after). In both cases, the researcher and another postgraduate psychology student from the University of Canterbury independently analysed the scores on this

measure, by comparing subjects' responses with 15 pre-determined programme learning goals that had been identified by the WASS programme coordinator. They then convened afterwards to discuss and decide on a score for each subject. Both scorers had received some prior practice in this scoring procedure during the pilot-testing of this measure. Inter-rater reliabilities for the learning measure can be found in 4.3.1..

The 15 learning goals related to what individuals should have learnt by the end of the programme. Subjects were given one mark for each response that was correct according to these 15 learning goals and no marks for incorrect responses. As a result, learning was a continuous variable with a high score representing a high level of essay writing knowledge, and possible scores ranging from 0-15. In line with suggestions by Kraiger et al. (1993), the test itself was an untimed 'power test' which measured the accuracy of learning as opposed to the speed that subjects could access learning.

Self-efficacy

Self-efficacy was assessed by a 6-item scale, adapted from Hill, Smith and Mann (1987) and Riggs and Enoch (1990) (see Appendix A). A 7-point Likert response format was used (1='Very Strongly Disagree', 7='Very Strongly Agree') with a low score indicating a low degree of self-efficacy. The same scale was used to assess subjects' essay writing self-efficacy prior to and after the WASS programme. Factor analysis of this scale by the researcher indicated that only one factor existed. This suggests that the scale was measuring only one construct as intended.

As Noe (1986) suggests, assessment of trainee's self-efficacy should focus on effective responses to learning and change (for example, confidence in learning situations). It seems that such assessment should also include self-perceptions of performance capability in relationship to essay writing. It was these two requirements and the reported reliabilities of the original measures, that guided the construction of this self-efficacy measure.

There has been some debate with regard to how self-efficacy should be measured (eg., Eastman & Marzillier, 1984; Marzillier & Eastman, 1984), and the operationalisation of the self-efficacy concept in this study was different from Bandura's (1977; 1982) traditional definition of self-efficacy magnitude and strength. However, the approach in this study has been used by Bandura (1977), Hill et al. (1987) and Riggs and Enoch (1990), with some success in similar situations.

Motivation to Learn from the Programme

Motivation to learn from the programme was assessed by a 4-item scale adapted from Noe and Schmitt (1986). A 7-point Likert response format was used (1='Very Strongly Disagree', 7='Very Strongly Agree') with a low score indicating lower levels of motivation to learn from the programme (see Appendix A). Factor analysis of this scale by the researcher indicated that only one factor existed. This suggests that the scale was measuring only one construct as intended.

Programme Reactions

Programme reactions was assessed by a 6-item scale adapted from questions used by Canterbury University's Educational Research and Advisory Unit in making course evaluations, and items from a training programme reactions scale from Wexley and Baldwin (1986). A 7-point Likert response format was used (1='Very Strongly Disagree', 7='Very Strongly Agree') with higher scores on this measure representing more positive reactions to the WASS programme (see Appendix A). Factor analysis of this scale by the researcher indicated that only one factor existed. This suggests that the scale was measuring only one construct as intended.

Programme reactions, by virtue of their spontaneous nature, are complex and changeable so that one must be selective and decide on the particular type of reactions to be measured. Like Mathieu et al. (1992), the scale used in this study considered both affective programme reactions (eg., I enjoyed my participation in this WASS programme) and the perceived relevance of the programme to essay writing (eg., I gained a strong understanding of the principles of essay writing during this programme).

Demographic Information

Data concerning subjects' age, gender, year at university, highest level of education and student status, were collected to assess any possible relationships between these variables and the outcome variables of final essay writing performance, learning after the programme and self-efficacy after the programme.

4.2.3. Procedure

Study One had five stages and these are outlined in Figure 2.

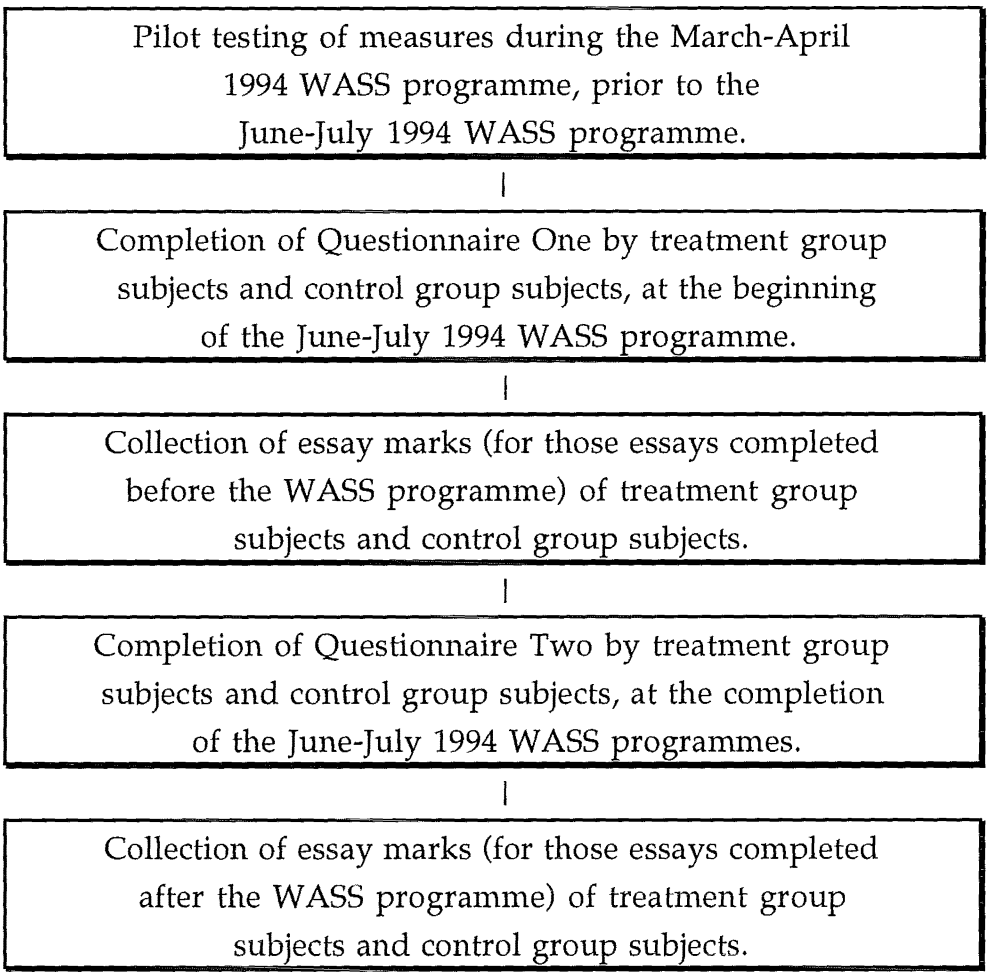

Figure 2: An Overview of the Quasi-Experimental Design of Study One

Initially, the self-efficacy, learning and programme reactions measures were pilot tested during the WASS programme run in March-April 1994, prior to the major study itself (see 4.2.2.1.). This pilot testing of some, but not all of the measures, represented a compromise between the need to refine the measures used to assess the variables of interest and the limited time available prior to the March-April 1994 WASS programme.

Following this preliminary pilot testing, students who enrolled in the WASS programme in June-July 1994 were invited to participate in Study One by means of a mailed invitation (see Appendix C). Control group subjects were invited to participate in a similar manner, through departmental tutorial classes. All subjects who chose to participate were given an indication of the nature of the study and the forthcoming requirements of them (see Appendix A). Subjects were also made aware of the possibility of monetary rewards for their participation. These monetary rewards were offered as a lottery, in an attempt to maximise the initial participation rate and to minimise subject attrition throughout the study.

The 67 treatment subjects who participated were given a first questionnaire at the initial WASS session and were asked to return it to the following session one week later. Questionnaire One comprised base-line data including demographic details (such as age, gender and highest level of education), and the measures of learning before the programme, essay writing self-efficacy before the programme and motivation to learn from the programme (see Appendix A). The 21 subjects from the control group were given a similar questionnaire at this stage (see Appendix A), and were asked to return it within the next week.

Subjects' marks for essays completed prior to the start of the WASS programme were then obtained from their respective departments. Because of the nature of the study's design, subjects had no idea that these marks would become part of the study when they wrote the essays.

At the completion of the WASS programme in July 1994, five weeks after its beginning, subjects from the treatment group completed and returned Questionnaire Two. This questionnaire comprised the programme reactions measure and the same learning and self-efficacy measures as they completed prior to the programme (see Appendix A). The control group subjects were given a similar questionnaire at this stage (see Appendix A), and were asked to return it within the next week. Subjects' marks for essays completed after the end of the WASS programme were then obtained from their respective departments.

4.3. Results

The results are presented in three sections. The first section deals with the general description of the data and includes the reliability analyses of the measures and the relevant descriptive statistics. The second section tests the effectiveness of the WASS programme. The third section tests the hypothesised theoretical relationships.

4.3.1. General Description of the Data

The Cronbach alpha reliabilities for the measures, motivation to learn from the programme (α=.88), self-efficacy (before) (α=.84), self-efficacy (after) (α=.89) and programme reactions (α=.74), were all satisfactory. The test-retest reliability of .66 for the self-efficacy measure was also satisfactory, as were the inter-rater reliabilities for the learning measure of .83 before the programme and .85 after the programme.

Table 2 presents the means, standard deviations and intercorrelations of the measures. Examination of the correlation matrix indicates that the majority of the intercorrelations between the different measures are reasonably low. This is evidence that the measures are assessing different psychological constructs. Examination of the means and standard deviations indicates that the variables all demonstrate reasonable variance. The variables also satisfy the statistical assumptions of the t-tests and multiple regression analyses that are employed later, as each of them approximates a normal distribution, and the predictor variables are independent of each other.

Table 2: Means, Standard Deviations and Intercorrelations of the Measures.

	M	SD	1	2	3	4	5	6	7	8
1. Performance (initial) Range [1-100]	58.15	8.60	1.00	.76**	.01	.04	.11	.23	-.06	-.02
2. Performance (final) Range [1-100]	61.15	9.67		1.00	.18	.27*	.14	.25*	.15*	.14
3. Learning (before) Range [1-15]	3.19	1.71			1.00	.61*	.29*	.29*	.13	.06
4. Learning (after) Range [1-15]	4.76	2.03				1.00	.11	.16	.08	.09
5. Self-efficacy (before) Range [1-42]	19.63	5.83					1.00	.66*	.05	.02
6. Self-efficacy (after) Range [1-42]	21.09	6.04						1.00	.08	.11
7. Motivation to learn Range [1-28]	24.87	4.08							1.00	.09
8. Reactions Range [1-42]	24.84	3.01								1.00

Note: N=67.

* $p < .05$ ** $p < .01$

The mean essay mark for students after the WASS programme was 61.15 in comparison with 58.15 before the programme. The mean self-efficacy for students after the WASS programme was 21.09 in comparison with 19.63 before the programme, which represents little change from an average response of just below the mid-point of this scale (see Appendix A). Whereas subjects demonstrated little knowledge of the key learning goals prior to the programme (M=3.19), an improvement following the programme was observed (M=4.73). Subjects' motivation to learn from the programme (M=24.87) represents an average response of well above the mid-point of this scale (see Appendix A) and indicates that subjects were highly motivated to learn from the programme. Subjects' reactions to the programme (M=24.84) represents an average response of slightly above the mid-point of this scale (see Appendix A) and indicates that subjects were moderately satisfied with the administration and content of the WASS programme. Students' final essay writing performance correlated significantly with their motivation to learn from the programme, r=.15, their self-efficacy after the programme, r=.25, their learning after the programme, r=.27, and their initial essay writing performance, r=.76.

4.3.2. Testing of Hypotheses 1-3; The Effectiveness of the WASS Programme

4.3.2.1. Preliminary Analysis of the Effectiveness of the WASS Programme

This involved a comparison of the treatment group and the control group by means of independent sample t-tests, in order to determine if the two groups were initially equivalent with regard to the demographic variables. This testing revealed that there were no significant differences between the groups with regard to any of these variables. As a result, no demographic variables were controlled statistically in the subsequent analyses.

4.3.2.2. Primary Analyses of the Effectiveness of the WASS Programme

Independent sample one-tailed t-tests were used to evaluate Hypotheses 1-3 regarding the effectiveness of the WASS programme. There were three variables in this part of the analysis and each of these was treated as a 'gain score' (post-programme scores minus pre-programme scores). As these gain scores represent the changes in performance, learning and self-efficacy from pre-programme levels, they are in fact indicators of the effectiveness of the WASS programme. Pre-programme scores were included in the analysis to control for initial individual differences in the three variables.

The use of gain scores has been questioned because of their lack of reliability and appropriateness for answering substantive research questions (eg., Cronbach & Snow, 1977). However, Rogosa, Brandt, and Zimowski (1982) conclude that when only pre-post data are available, the difference score is a natural and useful estimate of individual change. The reliabilities for the gain scores were calculated by using the formula for the reliability of parallel tests (see Stanley, 1967). Difference-score reliabilities for learning (.66) and self-efficacy (.68) were considered to be adequate.

Hypothesis 1

Essay writing performance was expected to increase more for those who participated in the WASS programme than for those who did not. As expected, there was a significant difference between the two groups on this measure, with the treatment group having a greater increase in essay writing performance ($M=3.05$) than the control group ($M=0.77$), $t(86)=2.01$; $p<.05$.

Hypothesis 2

Essay writing learning was expected to increase more for those who participated in the WASS programme than for those who did not. As expected, there was a significant difference between the two groups on this measure, with the treatment group having a greater increase in learning ($M=1.57$) than the control group ($M=0.00$), $t(86)=3.75$; $p<.0001$.

Hypothesis 3

Essay writing self-efficacy was expected to increase more for those who participated in the WASS programme than for those who did not. In contrast to what was expected, there was no significant difference between the two groups on this measure, with the treatment group having a similar increase in self-efficacy (M=1.46) to the control group (M=1.29), t(86)=0.15; n.s.

4.3.3. Testing of Hypotheses 4-7; The Hypothesised Theoretical Relationships

Multiple regression analyses were conducted to test the hypothesised theoretical relationships. Although multiple regression can not confirm causal relationships, it is useful in removing the influence of shared variance that may exist amongst predictor variables.

4.3.3.1. Preliminary Analysis of the Hypothesised Theoretical Relationships

Before testing the hypotheses of interest, the demographic variables of age, gender, highest education level, year at university and student status were analysed by means of multiple regression analysis, to determine whether they had any significant relationships with the variables of theoretical interest. In this way, the possibility of confounding relationships that research has identified (eg., Meier et al., 1984; Tziner & Falbe, 1993) were explored. As no statistically significant relationships were found from this preliminary analysis, none of the demographic variables were controlled statistically in the subsequent analyses.

4.3.3.2. Primary Analyses of the Hypothesised Theoretical Relationships

It will be recalled that Hypotheses 4-7 proposed that initial essay writing performance, motivation to learn from the programme, learning after the programme and self-efficacy after the programme would predict levels of final essay writing performance. Final essay writing performance was regressed against these predictor variables in order to test Hypotheses 4-7. Results of the regression analyses which permit tests of Hypotheses 4-7, are presented in Table 3.

Hypothesis 4

As expected, for those individuals who participated in the WASS programme, levels of initial essay writing performance were positively related to levels of final essay writing performance. This can be seen in Table 3, β=.76, $F(5,61)=10.27$; $p<.0001$. This result is consistent with that found in the zero-order correlation for the same two variables.

Hypothesis 5

As predicted, for those individuals who participated in the WASS programme, levels of motivation to learn from the programme were positively related to levels of final essay writing performance. This can be seen in Table 3, β=.15, $F(5,61)=2.05$; $p<.05$. This result is consistent with that found in the zero-order correlation for the same two variables.

Hypothesis 6

As expected, for those individuals who participated in the WASS programme, levels of learning after the programme were positively related to levels of final essay writing performance. This can be seen in Table 3, β=.21, F(5,61)=2.80; p<.01. This result is consistent with that found in the zero-order correlation for the same two variables.

Hypothesis 7

In contrast to what was predicted, for those individuals who participated in the WASS programme, levels of self-efficacy after the programme were not related to levels of final essay writing performance. This can be seen in Table 3, β=.02, F(5,61)=.21; n.s.. Although significant at the zero-order level of analysis, self-efficacy after the programme was not significant in the multiple regression.

Table 3: The Standardised Regression Coefficients and Probability Values for the Regression Analysis of the Predictor Variables on Final Essay Writing Performance.

Predictor Variables	Final Essay Writing Performance	
	β	p
1. Initial Performance	0.76**	.000**
2. Motivation to Learn	0.15*	.045*
3. Learning (after)	0.21**	.007**
4. Self-efficacy (after)	0.02	n.s.

* p < .05 ** p < .01

Initial essay writing performance, motivation to learn from the programme and learning after the programme, were predictive of final essay writing performance, R=.81, and accounted for 66% of the variance in this variable. On the basis of this regression analysis, it appears that those with higher levels of initial essay writing performance, higher levels of motivation to learn from the programme and higher levels of learning after the programme, had higher levels of essay writing performance after the WASS programme. In contrast, self-efficacy after the programme was not predictive of final essay writing performance.

The most parsimonious model that reproduced the data is shown in Figure 3. The relationships in the model are based on the statistical analyses of the data and the temporal sequencing of the variables in the study.

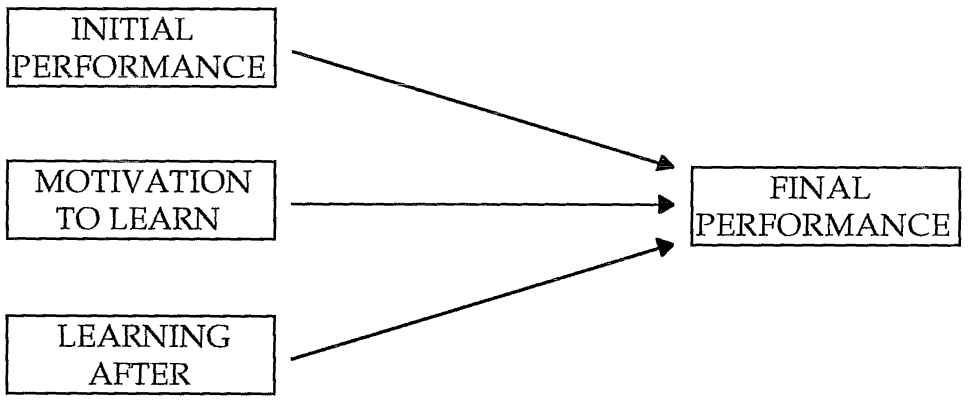

Figure 3: The Most Parsimonious Model of the Theoretical Relationships of Study One.

4.3.3.3. Secondary Analyses of the Hypothesised Theoretical Relationships

Secondary analyses were also conducted. First, the two measures of programme effectiveness that were not hypothesised as dependent variables, programme reactions and learning after the programme, were each separately regressed against the predictor variables of 4.3.3.2., in order to identify any other theoretical relationships. No statistically significant findings were found from this analysis. Second, final essay writing performance was regressed against the predictor variables, initial essay writing performance, motivation to learn from the programme, learning after the programme and programme reactions to determine whether programme reactions was also a significant positive predictor of final essay writing performance. For those individuals who participated in the WASS programme, levels of programme reactions were not significantly related to levels of final essay writing performance.

4.4. Discussion

This section is divided into two parts. The first focuses on the findings regarding the effectiveness of the WASS programme. The second focuses on the findings regarding the hypothesised theoretical relationships. An integration of these findings with the past literature and the implications of them can be found in sections 6.2. and 6.3. respectively.

4.4.1. Effectiveness of the WASS Programme

There were changes in both levels of essay writing learning and essay writing performance for participants in the WASS programme. Levels of learning increased on average by 49 percent and essay writing marks increased on average by three percentage marks. While the magnitude of the change in essay writing marks is small in a practical sense, it is still likely to be important to the individual student, and arguably all that could be expected from a programme of such short duration. Considered together, these two findings regarding learning and performance indicate that the WASS programme was effective, as each of these variables are recognised measures of training programme effectiveness. This is evidence that participation in the WASS programme is likely to increase an individual's knowledge about essay writing and improve their essay writing performance.

The finding that the essay writing self-efficacy of participants in the WASS programme did not change is somewhat surprising, as an increase in essay

writing performance without a corresponding increase in self-efficacy seems to run contrary to social cognitive theory. In hindsight though, there are two possible reasons for this finding. First, the WASS programme does not fully comply with a number of prerequisites for changes in self-efficacy. For example, self-efficacy often improves through feedback which informs individuals that they possess certain capabilities. In the WASS programme though, subjects had received no feedback on the essays they completed while the programme was running, by the time of their second self-efficacy assessment in July. As a result, their self-efficacy was not affected by the potential influence of feedback. In addition, the literature on modeling indicates that individuals acquire information about their capabilities vicariously through knowledge of others (Schunk, 1984). In the WASS programme, the lecture format only provided modeling of specific essay writing techniques and not of the complete essay writing process. As a result, individuals' self-efficacy was less likely to increase over the course of the WASS programme.

The second possible reason for this finding relates to the fact that the Likert-type scale used in this study to assess self-efficacy was not the traditional method of operationalising the construct (discussed by Bandura, 1986). As a result, the construction of this alternative method of self-efficacy assessment may have resulted in inaccurate measurement of the construct. However, while this method of assessment may have caused some problems with the measurement of self-efficacy in this study, assessment of self-efficacy is susceptible to a number of problems at present, in any form. Bandura (1986)

himself even comments that "one's judgement of self-efficacy on cognitive tasks is a complicated matter prone to faulty assessment".

It seems likely then, that there was either no real change in self-efficacy over the course of the WASS programme because of a lack of appropriate prerequisites for self-efficacy development in the programme itself, or that there was a real change in self-efficacy which was not detected by the assessment method that was used in this study. Whatever the case might be, this finding regarding self-efficacy should not detract from the important changes that occurred with regard to participants' essay writing performance and learning. These findings indicate that enrolment in the WASS programme is of some benefit to students. It provides students with further essay writing skills that, when employed, translate into improved essay writing performance.

4.4.2. The Hypothesised Theoretical Relationships

Participants in the WASS programme with higher levels of initial essay writing performance, higher levels of learning after the programme and higher levels of motivation to learn from the programme, were also likely to have higher levels of final essay writing performance. These findings are of some importance, for a number of reasons.

First, the relationship between motivation to learn and final essay writing performance suggests that those individuals who are highly motivated to learn from the WASS programme will benefit more in terms of final essay

writing performance than less motivated individuals. Intuitively, this is not a surprising finding as it seems likely that motivational factors can swamp the potential effects of training programmes (Campbell, 1989). However, as this appears to be the first time any research has identified a relationship between motivation to learn and the training programme effectiveness measure of post-training performance, this is a finding of some importance. This result suggests it is time to investigate the relationship of motivational factors to training programme effectiveness more systematically.

Second, the relationship between learning after the programme and final essay writing performance suggests that high levels of learning after the WASS programme are desirable. As the programme improved levels of learning amongst its participants (see 4.4.1.), this suggests that the more one learns from the course the higher will be one's level of learning after the programme, and also, one's final essay writing performance will tend to be higher. This suggests that the more essay writing related knowledge the WASS programme can transfer to its participants, the higher their final essay writing performance will tend to be.

Third, while motivation to learn and learning after the programme were related to final essay writing performance, the strongest relationship was found between initial essay writing performance and final essay writing performance. This indicates that, not surprisingly, one's initial essay writing performance effectively constrains one's level of final essay writing performance. This also demonstrates that there is a greater return in

training individuals who are initially more competent in essay writing, as the final performance of those who were initially less capable did not change as markedly.

Fourth, in terms of the strength of the relationship that ability-related variables and motivational variables have to the effectiveness measure of final essay writing performance, these findings indicate that the motivational variable (motivation to learn) clearly has a weaker relationship than the ability-related variable (initial performance). Together both types of variables explain a significant proportion of the variance in final performance. However, even considering the variance that remains unexplained, the ability-related variable is clearly more strongly related to final performance. This provides support for the anecdotal belief amongst practitioners, that ability-related variables have a stronger relationship to post-training performance than do motivational variables.

The possible reasons for why self-efficacy after the programme did not predict levels of final essay writing performance are similar to those that were covered in 4.4.1., and include reasons such as a lack of appropriate prerequisites for self-efficacy development in the WASS programme itself, and inaccurate and inappropriate self-efficacy measurement. To reiterate, in this case it is difficult to determine whether there was a genuine relationship between self-efficacy after the programme and final essay writing performance.

4.5. Conclusion

Study One has demonstrated that there were quantitative changes in essay writing performance and knowledge for those participants in the WASS programme. Initial performance, motivation to learn from the programme and learning after the programme were also identified as three individual characteristics that were related to the effectiveness of the WASS programme.

It is clear that Study One has considerable usefulness in providing a macro perspective of the effectiveness of the WASS programme. It has permitted a detailed analysis of this issue, both practically and theoretically. While it provides a macro perspective though, it fails to provide a micro perspective of the effectiveness of the WASS programme. This is where Study Two, the focus of the next chapter, complements Study One by providing an alternative evaluation of the WASS programme.

CHAPTER FIVE

STUDY TWO

This chapter is divided into four sections. The first section provides a general introduction to Study Two and the principles of the repertory grid technique. The second section outlines the method of Study Two and provides details about the subjects, instruments and procedure. This is followed by a results section which provides answers to the research questions of Study Two. Finally, the fourth section provides a discussion of these results.

5.1. General Introduction

A common, yet flexible, approach to training programme evaluations is to use questionnaires as a primary method of data collection and to support this with interview data from a sub-sample (eg., Robinson & Robinson, 1989). This provides both quantitative and qualitative data by which a programme can be evaluated. Dependent upon the aim of the interviews, it also provides the opportunity to focus in more detail on any of the first three levels of Kirkpatrick's (1976) training evaluation model - trainees' reactions to the programme, trainees' learning and trainees' post-programme behaviour change.

Repertory grid is one technique that enables the collection of qualitative interview data on an individual basis. The approach is a direct outcome of Kelly's (1955) Personal Construct Theory and was devised by him as a means of exploring personal construct systems associated with any particular sphere of an individual's life (Brook, 1982). It is a method of understanding how people perceive things and make distinctions between various aspects of their environment. Chetwynd (1973) has described repertory grid as a technique for measuring the content and structure of the cognitive system. This is possible because any construct system is structured hierarchically, with a mixture of salient, superordinate constructs and less salient, subordinate constructs which together produce a highly complex construct system.

The major advantage of repertory grid as a research technique is its adaptability to an almost limitless range of situations where the researcher is interested in finding out more about how people construe their environment. A number of researchers (eg., Ashton & Gibbon, 1974; Brook, 1982; Brook, 1986; Kevill, Shaw & Goodacre, 1982; Large, 1985b; Phillips, 1980) have used the approach to collect attitudinal data from individuals involved in training programmes. A number of researchers have also used the approach to collect data regarding university students' learning (eg., Figueroa & Harri-Augstein, 1988; Phillips, 1980) and students' attitudes towards subjects (eg., Duckworth & Entwistle, 1974).

Kelly (1955) proposed that people construct 'mental maps' of their environment. In the context of this study, the mental maps chart the

domain of an individual's essay writing. The construct system then, constitutes the framework from which individuals interpret essay writing. One direct implication of this is that changes in the essay writing attitudes of subjects in the WASS programme may be assessed by using repertory grid to measure changes in their construct systems. This is because the construct systems of individuals are constantly in a process of change as individuals face new experiences and reorganise their personal constructs in such a way that their interpretation of reality becomes more meaningful to them (Brook, 1982). The use of repertory grid in this manner is clearly relevant, as one of the unstated objectives of the WASS programme is to change the attitudes of students in a positive manner.

The researcher felt that the use of repertory grid as the basis of this study might also complement and clarify the findings of Study One. For example, Study One indicated that new skills were learnt by subjects. Personal construct psychologists would suggest that learning new skills requires reconstrual of facets of the particular task (Thomas & Harri-Augustein, 1977). By constructing a number of repertory grids in Study Two and linking them with the results of Study One, it was hoped that the reconstrual of facets of essay writing could be identified, and therefore reinforce the findings from Study One regarding changes in individuals' learning.

It also appears that, to date, the repertory grid technique has not been applied to the study of individuals' attitudes during an essay writing programme. Although this means there is little existing research in this area to draw upon and to integrate with the findings of this study, it does mean that

Study Two is unique in its focus. As a result, the use of repertory grid in this context was thought to be potentially useful from a research perspective.

The general objective of Study Two then, was to examine the content and changes of subjects' essay writing related construct systems in a longitudinal manner, before and after the WASS programme. The research questions of interest have already been presented in section 3.6..

5.1.1. Repertory Grid Methodology

The repertory grid technique involves a subject's evaluation of a number of 'elements' across a number of 'constructs' which the subject uses to make sense of the world. Smith (1978) distinguished between elements and constructs by defining elements as the objects of people's thoughts (eg., people, objects, events or experiences) and constructs as the qualities that people attribute to those objects (eg., interesting, exciting and stimulating).

Analysis of an individual's construct system can identify the complex relationships between elements and constructs, and the constructs which subjects use to differentiate most effectively between various elements. In the context of this study, knowledge of an individual's construct system helps identify that person's attitudes and perceptions of certain aspects of essay writing.

5.2. Method

5.2.1. Subjects

The subjects in the present study were ten participants from Study One who, prior to the beginning of the WASS programme, had volunteered to also participate in this subsequent repertory grid study when given the opportunity by the researcher. Each subject gave their informed consent in a written form (see Appendix A). The criteria for inclusion was that the subjects were representative of the 67 subjects in Study One in terms of age, gender, and levels of initial essay writing performance, and were prepared to participate in two interviews with the researcher, for a total of approximately one and a half hours.

The demographic details of subjects were similar to those who participated in Study One. These details were as follows: mean age was 30.2 years, 80 % were female, 80% were full-time students, 80% were first year students, and their highest level of education ranged from School Certificate to Bursary. The changes in these subjects' levels of essay writing performance, learning and self-efficacy over the course of the WASS programme, approximated the changes of subjects in Study One.

A comparison group of five subjects who did not attend the WASS programme, also volunteered to participate in this part of the study and gave their informed consent in a written form (see Appendix A). They were included in order to enable some determination of the real changes in the attitudes of students in the WASS programme over time.

5.2.2. Instruments

Repertory grids were developed for each subject by eliciting all of the constructs and the majority of the elements. The reason why some of the elements were not elicited is explained in 5.2.3.. The elements were aspects of essay writing that subjects felt were crucial in writing an effective university essay. The number of elements elicited ranged across subjects from 8 to 13. The constructs were bi-polar descriptions of subjects' attitudes or feelings towards each of these elements. The number of constructs elicited ranged across subjects from 5 to 11.

5.2.3. Procedure

Study Two had two stages and these are outlined in Figure 4. The use of repertory grid in this longitudinal manner has been used successfully by a number of other researchers (eg., Ashton & Gibbon, 1974; Beck, 1987; Figueroa & Harri-Augstein, 1988; Kevill et al., 1982; Kuypers, Davies & van der Vegt, 1987; Large & James, 1988; Phillips, 1980; Salmon, 1993).

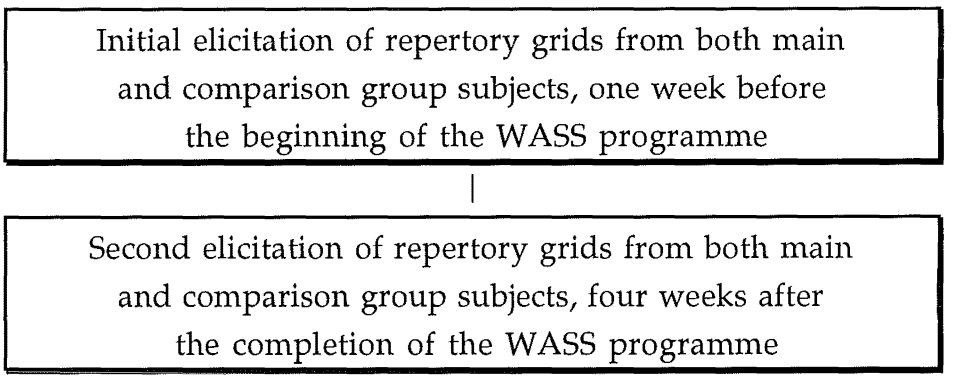

Figure 4: An Overview of the Design of Study Two

Having used the repertory grid approach previously, the researcher was competent with the technique of eliciting grids. Each subject participated in two repertory grid interviews with the researcher at the University of Canterbury. The first took place one week before the beginning of the WASS programme and lasted approximately one hour. The second interview was held four weeks after the completion of the WASS programme and lasted approximately thirty minutes. The information obtained resulted in the construction of two grids for each subject; one representing essay writing attitudes before the WASS programme and the other representing essay writing attitudes after the programme.

During the first interview, an essay writing grid was developed for each subject. All of the constructs and the majority of the elements for the repertory grid analysis were elicited from participants. The technique of elicitation was chosen, as opposed to providing all the elements and constructs, as the researcher wanted to ascertain the unique way that each individual felt about essay writing.

All but two of the elements were elicited at the beginning of the repertory grid interview by asking the subject

"What are the aspects of essay writing that you feel are crucial in writing an effective university essay?"

Subjects were encouraged to think of a range of specific essay writing aspects. They were also encouraged to make these aspects which formed the grid elements as representative and discrete as possible. Elements were elicited until no more were produced. Two additional elements - 'overall essay writing' and 'ideal essay writing' aspect - were then provided for the subject. These two elements were included in order to obtain further information about the changes in attitudes of subjects. It was assumed that the discrepancy between these two elements would give some indication of subjects' overall satisfaction with essay writing. Any changes in this discrepancy measure over time, would indicate a change in their attitude towards essay writing. This type of approach has been used successfully by researchers in a number of different situations (eg., Gati & Winer, 1987; Large, 1985a). The 'ideal essay writing' aspect was described as

"a hypothetical, ideal aspect of essay writing which is preferred to all other aspects of essay writing."

The 'overall essay writing' aspect was described as

"your general feelings towards essay writing."

Constructs were then elicited by the dyadic method (Kelly, 1955) in order to minimise the interviewer bias. This elicitation method has been used successfully by other researchers (eg., Epting, Probert & Pittman, 1993; Klion & Leitner, 1985). This technique was used as a pilot-test of the more commonly used triadic elicitation method was found to be confusing for subjects. In contrast, the technique of dyadic elicitation was understood better by subjects.

Each elicited element was written down on a number of blank element cards. These element cards were then presented to the subject in pairs. One pole of each construct was then elicited by asking the subject

"Which of these two aspects of essay writing do you prefer doing, and why?"

The other pole was elicited by asking,

"Why do you not prefer doing the other aspect of essay writing?"

The eliciting of constructs continued in this manner until the same constructs were being repeatedly elicited.

The full grid was then administered by changing each of the elicited bi-polar constructs into a five-point scale, and asking the subject to rate the elicited elements on each of the elicited constructs, each on a separate sheet of paper. The reason for obtaining ratings on separate sheets was to prevent subjects

being influenced by the ratings from one of their other elements (Lange, 1992). On average, the first repertory grid interview took 55 minutes to complete.

The second grid interview was completed by subjects four weeks after the completion of the WASS programme. In the second interview, subjects were provided with the elements that had been elicited from them during the first session. They were then given the chance to add to, or remove, any of the elements. While one subject added one element, the majority of subjects chose to remove elements that they now felt were less important. Following this preliminary stage of the second interview, the elicitation of constructs and the ratings of all constructs on the elements was carried out identically to that of the first interview. In order to minimise subject reactivity, no subjects were shown their ratings from their first grid during this second interview. Subjects were later debriefed over the telephone; they were given general feedback about their results and had the opportunity to ask any final questions.

5.3. Results

5.3.1. Principal Components Analyses

Principal components analyses were conducted on the grids of all subjects, by means of a computer programme called RepGrid (Shaw, 1989). This revealed that there were no significant changes in the factor structure of subjects' grids over time and no significant differences between the factor structures of main and comparison group subjects (see Appendix D for further details and statistical results).

5.3.2. Analysis of Salient Constructs and Elements

There are three aspects to this section. First, the salient constructs and elements for the main group before the WASS programme are described. Second, the salient constructs and elements for the main group after the WASS programme are outlined. Third, a comparison is made between the salient constructs and elements for the main group with those for the comparison group.

The results of this section focus specifically on changes in subjects' salient constructs and elements over the course of the WASS programme. The salient constructs and elements of a grid can be identified from the construct and element loadings on each of the factors obtained from the principal components analysis. The higher the loading on a factor, the more salient the construct or element.

More attention is given to the constructs as opposed to the elements in this section, as they are more relevant to the focus of this study. A distinction is also made between 'internal' constructs which all seem to have some relation to an individual's self-efficacy, and 'external' constructs which relate to the actual characteristics of the aspects of essay writing.

In this section, two of the means of describing the results have been adopted from Lange (1992). First, elements are referred to as either positive or negative depending on whether their factor loadings are positive or negative. Second, where a construct or element was salient for more than one subject in the main group, the number of subjects is included in brackets after the construct/element.

This section outlines the general trends for the main and comparison group subjects. While this information is very useful, a more detailed analyses can also be gained by studying one of these subjects in more detail. In order to give an idea of the information that can be obtained at the individual level of analysis, the grids of a subject from the main group were selected for further analyses. The analyses for this subject can be found in Appendix E.

5.3.2.1. Salient Constructs and Elements for the Main Group Before the WASS Programme

There was a great deal of similarity in the responses from this group before the WASS programme. The most salient negative elements were overall essay writing (n=7), researching (n=6), writing effective introductions (n=4) and writing the bibliography (n=4). While these salient elements are not of particular interest, the constructs that distinguish these elements from others are. These elements were described by two types of constructs; either internal constructs such as "uncertain about how to do it" (n=9), "difficult" (n=8), "don't enjoy doing" (n=8), "confusing" (n=4), "not good at doing it" (n=4), "lack confidence regarding it" (n=4) and "not satisfying" (n=4), or external constructs such as "requires a lot of work" (n=4), "requires a lot of time" (n=5) and "can't express own ideas" (n=5).

The only salient positive elements were writing effective conclusions (n=5) and, not surprisingly, ideal essay writing (n=10). These elements were described by internal constructs such as "enjoy doing" (n=10), "understand requirements of it" (n=10), "easy" (n=8), "know how to do it" (n=7), "satisfying" (n=4) and "good at doing it" (n=4), and by the external construct "creative" (n=5).

5.3.2.2. Salient Constructs and Elements for the Main Group After the WASS Programme

The most salient constructs and elements after the WASS programme, showed some similarities and some changes when compared with the pre-programme results. Although perceived positively before the programme, writing effective conclusions was now viewed negatively (n=6), as was writing effective introductions (n=7). These elements were described by the internal constructs "difficult" (n=10), "don't enjoy doing" (n=9), "uncertain about how to do it" (n=8) and "not confident about doing it" (n=4), and by the external constructs "boring" (n=7) and "requires a lot of work" (n=4).

Researching (n=4) was now perceived positively as opposed to the previous negative view of it. The concept of ideal essay writing was still perceived positively (n=10) and throughout the study was a rather idealised picture of essay writing, without associated difficulties or problems. Two new salient elements, understanding the topic (n=5) and developing an argument (n=4) were also perceived positively. These four positive elements were described by the internal constructs "easy" (n=10), "enjoy doing" (n=8), "know how to do it" (n=5), "can do it well" (n=4), "confident about doing it" (n=4) and "satisfying" (n=4), and by the external constructs "involves learning" (n=7) and "requires less work" (n=4).

Although overall essay writing was perceived negatively before the programme, after the programme it was perceived both negatively (n= 3)

and positively (n=4). Because there was no apparent change in subjects' perceptions of their ideal essay writing element, an analysis was performed on the discrepancy between the perceptions of ideal essay writing and overall essay writing. It was theorised that any reduction in this discrepancy measure could be taken to indicate a change in perceptions of essay writing overall and therefore a change in subjects lack of satisfaction expressed towards essay writing. The discrepancy between the overall and ideal aspects of essay writing was measured by element match scores which measure the similarity of one element to another, and are part of the RepGrid analysis output (Shaw, 1989). A Mann Whitney U test was used to compare the change in the discrepancy measures from the main and comparison groups, as there was no a priori basis to assume a normality of distribution of the scores and the sample size was small. The calculated value of U=2, Z value=-2.200, probability of Z -2.200=0.028. Therefore, there was a significant decrease in the discrepancy measure which indicates an improvement in perceptions of overall essay writing for the main group, and this can be attributed to the effect of the WASS programme.

The salient constructs and elements for the main group, before and after the WASS programme, are summarised in Table 4.

Table 4: Salient Constructs and Elements for the Main Group, Before and After the WASS Programme

	Before the WASS Programme	After the WASS Programme
Positive Constructs	- Enjoy doing - Understand requirement of it - Easy - Know how to do it - Good at doing it - Satisfying - Creative	- Easy - Enjoy doing - Know how to do it - Can do it well - Confident about doing it - Satisfying - Involves learning - Requires less work
Positive Elements	- Ideal - Conclusion	- Ideal - Understanding the topic - Researching - Developing an argument
Negative Constructs	- Uncertain about how to do it - Difficult - Don't enjoy doing - Confusing - Not good at doing it - Lack confidence regarding it - Not satisfying - Requires a lot of work - Can't express own ideas	- Difficult - Don't enjoy doing - Uncertain about how to do it - Not confident about doing it - Boring - Requires a lot of work
Negative Elements	- Overall - Researching - Introduction - Writing the bibliography	- Introduction - Conclusion
Neutral Elements		- Overall

Table 4 clearly illustrates the changes that occurred to the main group subjects' salient constructs and elements, over the course of the WASS programme. The majority of these changes were positive. In fact, there were no negative changes with regard to the number of salient constructs and elements, and very few negative changes with regard to the nature of the salient constructs and elements.

5.3.2.3. Comparison of Salient Constructs and Elements for the Main Group With Those for the Comparison Group

Although there were fine-grained differences between the two groups before the WASS programme, initial similarities were more prevalent. While some elements were perceived slightly more negatively or positively by the comparison group, there were no real initial differences between the main group and the comparison group in terms of the elements that were actually mentioned. Similarly, no salient constructs were elicited initially from the comparison group that were not also obtained from the main group.

In contrast to the results of the main group after the WASS programme, very few changes in salient elements and constructs were identified in the comparison group after the programme. While some changes did occur, these changes were negligible. This lack of change in the perceptions of the comparison group reinforces the significance and validity of the results from the main group, and suggests that there were in fact unique changes in the attitudes of the subjects who participated in the WASS programme.

5.4. Discussion

In contrast with the quantitative results of Study One, Study Two has provided qualitative information, admittedly on a smaller sample. These data have provided an additional and more detailed perspective than the data from Study One. In general, there is some evidence of changes in the construct systems, and hence the attitudes, of subjects who participated in the WASS programme.

The specific results are discussed in two sections. The first section focuses on the changes in salient grid constructs, while the second section focuses on the changes in salient grid elements. The implications of these findings from Study Two are considered in section 6.3.. With both of these sections though, it was not possible to integrate these findings with any existing literature, as an extensive search of repertory grid research completed within the last twenty years indicated that the particular focus of this study has not been investigated in that period. This in itself indicates the unique nature of Study Two, and suggests that the contribution of this study to the literature is significant.

5.4.1. Changes in Salient Grid Constructs

For those subjects who participated in the WASS programme, there was some evidence of changes in their salient constructs over time. First, while there were no changes in the positive internal constructs elicited before and after the programme, there were changes with regard to both the number and nature of the elicited negative internal constructs. There was a decrease in the number of negative internal constructs elicited before (n=7) and after the programme (n=4), as the negative internal constructs of "confusing", "not good at doing it" and "not satisfying" were salient before the programme, but not after it. As these internal constructs seem to have some relation to one's self-efficacy, this is a finding of some importance. It suggests that after the programme subjects no longer attributed these negative constructs to their essay writing, and perhaps had more positive attitudes and greater self-efficacy towards essay writing. Subjects who participated in the WASS programme were less confused with essay writing, felt they were better at doing it and found it more satisfying.

Second, there were changes in the nature of the elicited external constructs. The elicitation after the programme, but not before, of the positive construct "involves learning", suggests that after the programme subjects adopted a more realistic perspective, as they appreciated that essay writing does require learning in order to be effective at it. The change from the use of the negative construct "requires a lot of time" to the positive construct "requires less work" also suggests that through the WASS programme, subjects have developed some methods of shortening the time required to complete

certain aspects of essay writing. As these changes are both positive, this also illustrates some of the beneficial effects that the WASS programme seems to have had on its participants.

The constructivist position on how the attitudes of individuals develop is clearly outlined by Thomas and Harri-Augustein (1977) who state that "the source of a person's attitudes is their personal knowledge and past experience evaluated within a personal system of beliefs and values". This suggests that these apparent changes in the essay writing attitudes of subjects' in the WASS programme are a result of either a change in their personal knowledge and/or their past experience with essay writing. This provides further support for the positive effects of the WASS programme, in terms of its effect on students' knowledge and/or experience with essay writing.

5.4.2. Changes in Salient Grid Elements

Probably the most important finding of Study Two was the decrease in the discrepancy between subjects' perceptions of overall essay writing and ideal essay writing. Because there was no change in subjects' perceptions of their ideal essay writing element, the change in the discrepancy measure indicates that after the WASS programme subjects' perceptions of essay writing overall had moved closer to their perceptions of ideal essay writing. This movement represents a positive change in subjects' overall attitudes towards essay writing. Before the WASS programme overall essay writing was perceived negatively, whereas after the programme it was perceived in a neutral manner. While this does not necessarily equate with an improvement in performance, it is an indication that subjects at least felt more satisfied about their overall essay writing skills.

This apparent improvement in the attitudes of subjects towards overall essay writing also occurred with the majority of the specific aspects of essay writing (see Table 4). In fact, only one aspect of essay writing (conclusions) was perceived more negatively after the WASS programme, whereas four aspects of essay writing (understanding the essay topic, researching, developing an argument and writing the bibliography) were perceived more positively after the programme.

5.5. Conclusion

Study Two has demonstrated that there were qualitative changes in participants' constructs, and hence their attitudes, over the course of the WASS programme. After the programme subjects no longer attributed certain negative constructs to their essay writing, and perhaps had more positive attitudes and greater self-efficacy towards essay writing.

Although more positive attitudes do not necessarily equate with an improvement in performance, personal construct psychologists would suggest that because learning of new skills requires reconstrual of facets of the particular task (Thomas & Harri-Augustein, 1977), these changes in construing might indicate that individuals are also learning new skills. In the case of Study Two, such an assumption would provide supporting evidence for the findings from Study One regarding changes in individuals' learning. From a personal construct viewpoint then, these changes in the construct systems of subjects are of some importance as they complement the findings of Study One.

In summary, Study Two has illustrated that the application of repertory grid to the study of training programme effectiveness and students' essay writing has considerable usefulness. It produces a detailed analysis of individuals' particular attitudes towards essay writing, while still providing useful information at a group level. As a result, it has effectively complemented the macro evaluation approach of Study One by providing a more detailed and extensive evaluation of the WASS programme.

CHAPTER SIX

GENERAL DISCUSSION AND CONCLUSIONS

This chapter is divided into five sections. The first section provides a general discussion of the results from Study One and Study Two. The second section integrates the findings of both studies with the past literature. This is followed by a section which discusses the implications of the results for theory and practice. The fourth section outlines the limitations of Study One and of Study Two. Finally, the fifth section makes some suggestions for further research on the relationship of individual characteristics to training programme effectiveness.

6.1. General Discussion

Study One has illustrated that the WASS programme was effective in terms of increasing participants' levels of essay writing performance and essay writing knowledge. It is possible that in the long term the programme may have also been effective in increasing participants' essay writing self-efficacy. However, certain difficulties prevented this from being assessed in this study.

In addition to determining the effectiveness of the programme, Study One has identified three individual characteristics of training programme effectiveness in the context of the WASS programme. Initial essay writing performance, learning after the programme and motivation to learn from the programme accounted for a sizeable proportion of the variance in participants' essay writing performance after the WASS programme. While the ability-related variable, initial essay writing performance, accounted for the majority of the variance, the other two variables also made important contributions.

Study Two has also provided some important findings. The results suggest that over the course of the WASS programme, there were changes in the essay writing related constructs used by participants and changes in their conceptions of aspects of essay writing. These changes indicate a move towards more positive attitudes amongst individuals who participated in the WASS programme. While these changes were of small magnitude, they

were arguably all that might be expected from an intervention programme of such short duration.

The research designs of Study One and Study Two have enabled the identification of relationships among variables, as well as changes in some of these variables over time. The use of a control group as part of the design has extended past research in the area and has provided a valuable measure of concurrent changes that may have occurred in the absence of the WASS programme. As with many research phenomena, simple trends still remain elusive. However, a number of findings are reasonably clear with regard to the WASS programme. This study has determined objectively the worth of the WASS programme in terms of effecting changes in students' essay writing performance, knowledge and attitudes. It has also identified a number of theoretical relationships in the research area of training programme effectiveness. Thus, the findings indicate that the WASS programme was generally effective. They also illustrate the importance of the relationship of individual characteristics to training programme effectiveness.

6.2. Integration of Findings With the Past Literature

The majority of the findings from Study One and Study Two converge with, and in some cases extend, the past literature in the area of training programme effectiveness. First, the identification of a positive relationship between motivation to learn from the programme and final essay writing performance extends past research in the area of training programme

effectiveness. This finding provides some support for the findings of Hicks (1984) and Ryman and Biersner (1975) that motivation to learn is positively related to training programme effectiveness. In addition, this study extends this past research as it appears to be the first to identify a relationship between motivation to learn and the effectiveness measure of post-training performance. This is a finding of some importance as all other findings to date have been with regard to the training effectiveness measure of post-training learning, rather than performance per se.

Second, the finding that learning after the programme is positively related to final essay writing performance provides support for the models of Mathieu et al. (1992) and Noe and Schmitt (1986), who propose that trainees' learning is related to their post-training performance in this manner. In addition, this result provides some support for the transfer climate model of Goldstein (1991) which recognises that the amount of learning obtained by a trainee is an important precursor to eventual performance.

Third, the positive relationship between initial essay writing performance and final essay writing performance provides further support for the findings of Crawford et al. (1986), Pace et al. (1990), Robertson and Downs (1979) and the training programme effectiveness model of Mathieu et al. (1993), that trainees' initial levels of performance are positively related to the effectiveness measure of post-training performance.

Fourth, the finding that programme reactions did not predict levels of final essay writing performance is in accordance with the majority of research in

the area of training (eg., Alliger & Janak, 1989; Noe & Schmitt, 1986), which suggests that programme reactions tend to be unrelated to training effectiveness measures, such as post-training performance. Indeed, participants' reactions to the WASS programme showed no direct relationship with any of the other variables of interest.

Fifth, the finding that the WASS programme was effective in increasing levels of essay writing performance and knowledge converges with similar results with regard to other effective essay writing development programmes (eg., Briggs, 1987; Reigstad & Yepes-Baraya, 1988). The observed effect that the WASS programme appears to have improved individuals' attitudes, also converges with a number of repertory grid studies which have identified positive changes in individuals' constructs (eg., Salmon, 1993) and general attitudes (eg., Large, 1985b) following a training intervention. However, the nature of the WASS programme means that the results of this study are rather unique and can not be compared directly with these other findings from the literature.

The only finding of the study which is in conflict with the past literature, was that self-efficacy after the programme did not predict levels of final essay writing performance. As a result, this study does not support the findings of Meier et al. (1984), that self-efficacy expectations do predict final essay writing performance. Consequently, neither does this study support the findings of Ford et al. (1992), Gist et al. (1991) and Mathieu et al. (1993) who have all identified a positive relationship between self-efficacy after training and post-training performance.

In summary, this study provides substantial support for the past literature in the area of training programme effectiveness, with the exception of self-efficacy effects. As the past literature has been conducted in diverse settings, this in turn, provides support for the validity of this study. Considered together, this study and the past literature illustrate the importance of the relationship between certain individual characteristics and training programme effectiveness.

6.3. Implications of Findings

There are both theoretical and practical implications which may be drawn from this study. Theoretically, a number of implications can be identified. First, the findings have provided further support for the relationship between individual characteristics and training programme effectiveness. As such, this study supports the conceptual framework of Baldwin and Ford (1988) which proposes that individual characteristics are one class of general factors that are related to training programme effectiveness. However, while the importance of certain individual characteristics is now becoming better recognised in the literature, it seems that research should continue to consider other individual characteristics that have not yet been identified. This seems particularly true with regard to motivational variables. The finding from Study One regarding motivation to learn, indicates it is time to investigate motivational variables in the area of training programme effectiveness more systematically, rather than concentrating merely on ability and personality related variables. Some motivational variables that could be investigated further are considered in section 6.5..

Second, none of the training programme effectiveness models of Mathieu et al. (1992), Mathieu et al. (1993) and Noe and Schmitt (1986) account for all of the theoretical findings from this study. Section 6.2. indicates that this study provides support for some of the propositions of each of these models, while not supporting all of them. This highlights the fragmented nature of these theoretical models, and the fact that there is currently no coherent theoretical framework to guide research in the area. It also indicates the need for further research in which these models and others are tested and revised on the basis of empirical research.

Third, this study has theoretical implications for the common, yet misinterpreted assumption that has become associated with Kirkpatrick's (1976) training evaluation model, namely that programme reactions are related to the outcome measure of learning. Participants' reactions to the WASS programme showed no direct relationship with any of the other variables of interest. As a result, this study provides further support for the finding of Alliger and Janak (1989) who concluded that programme reactions tend to be unrelated to the other outcome measures included within Kirkpatrick's (1976) typology.

There are also a number of practical implications which emerge from this study. First, the three identified individual characteristics of training programme effectiveness indicate the need for practitioners to consider both motivational and ability-related factors when developing and implementing training programmes. While ability-related variables appear to have a stronger relationship to post-training performance than do

motivational variables, both types of variables are important. Ideally, practitioners should take advantage of these factors in order to increase the likelihood that performance improvement will result from participation in training programmes (Noe & Schmitt, 1986). For example, while it is not easy to modify the motivations of individuals in a training programme, awareness that differences exist between individuals in terms of their motivation to learn, may nevertheless be useful. Perhaps more individualised attention could be directed towards such individuals during training, in an attempt to increase their motivation to learn. Similarly, an awareness that individuals' levels of learning at the end of a programme are likely to be related to final performance, means that equipping individuals with as much relevant knowledge as possible, should be a priority of any training programme. These suggestions have potential application to both the WASS programme and training programmes in general. They suggest that consideration of motivational and ability-related factors might increase the likelihood of improvements in trainees' post-training performance.

Second, the finding that programme reactions showed no direct relationship to any of the other variables of interest is of practical importance. It is widely accepted that participants' reactions to a programme are the most commonly used training evaluation measure by practitioners (Phillips, 1991). The finding concerning programme reactions effectively questions the use of participants' reactions as a measure of programme effectiveness, as in this study, this measure was only of use as an attitudinal indicator of participants' feelings towards the programme.

Third, the results of this study suggest that while the repertory grid technique is never likely to have universal practical utility, it could be used as an effective means of assessing qualitative change in a group training programme setting. The results of this study suggest that when used with other more quantitative techniques, it can be potentially useful as both a theoretical and practical evaluation tool. From a constructivist viewpoint, it enables assessment of changes in individuals' attitudes towards the actual task that the training is addressing, that may serve as an indicator of other outcome measures.

Finally, by assessing the effectiveness of the WASS programme, this study has demonstrated that essay writing abilities can be improved through a reasonably simple, short-term intervention. This has practical implications not only for educational settings, but also for commercial training programmes which focus on improving similar written language skills. It also seems to justify the past existence of the WASS programme and should consolidate its operation in the future as a valuable service at the University of Canterbury.

6.4. Limitations of Study One and Study Two

It is worth identifying the more important problems that may have affected the results from Study One and Study Two. With regard to Study One, a number of limitations can be identified. First, the design of the study did not assess the durability of the findings. As a result, it is not possible to determine whether the performance and learning gains remained in the long-term or whether they, as Bennis (1963) refers to it, 'faded out'. Clearly monitoring of programme findings in the long-term is important. However, such a design was beyond the scope of this study. Second, while the results of the study converged with past research in diverse settings, there are still limitations to the external validity of the study, as the context of the WASS programme was very specific - that is, a lecture based, content-to-skills essay writing programme in an academic setting, with a non-random sample of predominantly female students. Any results then, are most generalisable to tasks that require writing skills as a large component of the activities that are performed and where individuals are trained on a verbal basis within a group setting. Third, there may also be limitations concerning the internal validity of the study, as the design did not include an equivalent control group to assess the effects of the treatment intervention on subjects. These effects were controlled to some extent by administering similar questionnaires to both treatment and non-equivalent control group subjects. However, as pointed out by Brook (1982), there could have been a bias produced within the treatment subjects by their own expectations as well as those generated by the researcher and the programme coordinator. This effect in itself may have produced differences between the

treatment group and the control group quite apart from any direct effects of the training programme (Brook, 1982). Fourth, as discussed in 4.4.1., it is possible that problems were encountered regarding the measurement of the self-efficacy construct. This effectively meant that the study could not make any definitive conclusions regarding the role of self-efficacy.

A number of limitations can also be identified with regard to Study Two. First, while this study provided an acceptable analysis of subjects' attitudes, the sample was smaller than would have been desired ideally considering the individual grids were aggregated to obtain averaged data. As a result, the conclusions of Study Two should be accepted with some caution. Second, the elicitation of constructs and elements was quite a time consuming process in this study. While this is not a concern in a research sense, the use of an identical repertory grid approach in a field evaluation setting would be quite cumbersome and costly. This effectively limits the practical utility of repertory grid, unless some of the constructs and elements are provided to individuals and/or grids are administered on a group basis. Third, the repertory grid methodology does not explain how the subjects' constructs have developed, and fails to provide an 'action-plan' by which, in this present case, students could improve their present essay writing attitudes. Instead the technique is limited to describing students' present essay writing situations, with little consideration of their past or future cognitive structures.

6.5. Directions for Future Research

Of the three individual characteristics of training programme effectiveness that this study has identified, further research is particularly warranted with regard to the relationship between motivation to learn and post-training performance, in order to extend this unique finding. In addition, although difficulties were faced in this study with regard to the self-efficacy construct, this variable seems intuitively to warrant further investigation, particularly if reliable and valid assessment procedures can be developed.

Although the selected variables of this study made a significant contribution to post-programme performance, a portion of the variance in final essay writing performance remained unexplained. In the case of this programme and others like it, other individual characteristics that may be related to the quality of programme outcomes include the perceptions and personality characteristics of trainees (Noe, 1986). Furthermore, social cognitive theory encompasses additional variables that may also be related to training programme effectiveness. For example, outcome expectancies and goal setting may be other areas worth investigating in the area of training programme effectiveness as there is evidence of their influence in the general training research area (eg., Froman, 1977; Maddux et al., 1981; Moitra, 1976).

It is evident that a great deal is known about the conduct of training. However, the relationship that individual characteristics have to training programme effectiveness is one of the least understood areas at present. A

limited amount of research has focused on this area, and at present there is no coherent theoretical framework. Research is needed that more clearly identifies the important individual characteristics, applies them in organisational settings, and utilises a wider range of subjects, training modalities, and experimental treatments. There is also a critical need for the development of more relevant criterion measures of training programme effectiveness (Baldwin & Ford, 1988), the monitoring of long-term training effects, and the development of a research perspective that attempts to understand the relationship of individual characteristics to both the training programme design and the work environment (Baldwin & Ford, 1988). Ideally, this may lead to the development of a coherent theoretical framework for understanding those individual characteristics that are related to training programme effectiveness.

It is clear that training methods are continuing to evolve as a function of theoretical, practical and technological developments. This study indicates that training methods must take account of individual differences in order to be effective optimally in practice. This study also suggests that in order to gain a fuller understanding of the relationship that individual characteristics have to training programme effectiveness, there is a strong need for further theoretical and practical developments in this area.

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APPENDICES

APPENDIX A - Consent Forms and Questionnaires for the Treatment Group and the Control Group

Consent Form - Treatment Group

You are invited to participate as a subject in this research project. The aim of this project is to evaluate the effectiveness of the Writing and Study Skills Programme. Your involvement in this project will involve completing a 15-minute questionnaire and a similar 15-minute questionnaire at the conclusion of the programme in July. It will also involve giving your consent for your essay marks to be obtained from the various departments you are enrolled with this year.

The results of the project may be published as part of a Psychology Masters thesis. Only group, or average responses will be published though. You may be assured of the complete confidentiality and anonymity of data gathered in this investigation, as only your student I.D. number is required as a means of matching your successive questionnaire responses and essay marks.

At any stage of this study you have the right to withdraw your participation, including withdrawal of any information you have provided. By completing the questionnaire, however, it will be understood that you have consented to participate in the project.

If you participate in this study, you have the chance of receiving one of the three payments of $25 that is being offered. You will also be sent a brief report near the end of the year, outlining the major findings of the study.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee. The project is being carried out under the direction of Chris Vaughan, who can be contacted at either university (ext.7196) or home (3529246). He will be pleased to discuss any concerns you may have about participation in the project.

If you wish to participate in this study, please complete the following declaration:

I have read and understood the description of this project. On this basis I agree to participate as a subject in the project, and I consent to publication of the results with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the project, including withdrawal of any information that I have provided.

Student I.D. #: ____________________

Signature: ________________________ Date: _________________________

- -

Questionnaire One - Treatment Group

- -

Thank you for completing this form. All information is confidential. Please answer all questions as honestly as you can.

NOTE: questions are printed on both sides of each sheet.

- -

PART A

Please answer <u>all</u> of the following questions with regard to yourself;

1) Gender - Male / Female **(circle one)** ( )

2) Age - ____ (yrs.) ( )

3) Highest level of education attained before this year -
Undergrad. degree / Bursary / School Certificate / None of these **(circle one)**
( )

4) 'Student status' - Full-time / Part-time **(circle one)** ( )

5) Year of study - 1st year / 2nd year / 3rd year / post-graduate **(circle one)**
( )

6) Courses enrolled in at university this year -

_____

_____

_____

PART B

What do you think are the things you need to know how to do, to be able to write an effective university essay? **(Please list as many things as you can think of in the space provided).**

( )

PART C

Please answer <u>all</u> of the following questions with regard to yourself. (Please answer each question by writing the number you think is most appropriate in the brackets provided using the following scale).

1	2	3	4	5	6	7
Very strongly disagree	Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Very strongly agree

( ) 1) Despite my efforts I have few worthwhile results in the area of essay writing

( ) 2) I sometimes wonder if I have the necessary skills to write an effective essay

( ) 3) I think I would find it difficult to explain to other students the principles of effective essay writing

( ) 4) I understand essay writing techniques well enough to be effective in writing essays

( ) 5) I wonder if I will ever understand how to write effective essays

( ) 6) I find it extremely difficult to write an effective essay

PART D

The following questions deal with how you view the WASS programme. **(Please answer each question by writing the number you think is most appropriate in the brackets provided using the following scale).**

1	2	3	4	5	6	7
Very strongly disagree	Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Very strongly agree

( ) 1) I am motivated to learn the skills emphasised in the WASS programme

( ) 2) I will try to learn as much as I can from the WASS programme

( ) 3) The reason I decided to attend the WASS programme was to learn how I can improve my essay writing skills

( ) 4) I want to improve my essay writing skills in the WASS programme

PART E

Are there any other comments you would like to make about the WASS programme? **If so, please write them in the space provided.**

_____

_____

_____

Questionnaire Two - Treatment Group

Questionnaire Two was identical to that of Questionnaire One for the treatment group, with the exception that the motivation to learn scale (Part D) was replaced with the programme reactions scale. The programme reactions scale is reproduced below.

The following questions deal with your reactions to the WASS programme. **(Please answer each question by writing the number you think is most appropriate in the brackets provided using the appropriate scale).**

1) The lecturer stimulated my interest in the programme

Not at all 1 2 3 4 5 6 7 Very much ( )

2) In my view, the lecturer presented material at a level which has been neither too easy or too difficult

Strongly disagree 1 2 3 4 5 6 7 Strongly agree ( )

3) In my view, the programme has neither attempted to cover too little or too much

Strongly disagree 1 2 3 4 5 6 7 Strongly agree ( )

4) In my view, the programme content was neither too practical or too impractical

Strongly disagree 1 2 3 4 5 6 7 Strongly agree ( )

5) I gained a strong understanding of the principles of essay writing during this programme

Strongly disagree 1 2 3 4 5 6 7 Strongly agree ( )

6) I enjoyed my participation in this WASS programme

Strongly disagree 1 2 3 4 5 6 7 Strongly agree ( )

Consent Form - Control Group

You are invited to participate as a subject in this research project. The aim of this project is to study the essay writing of students'. Your involvement in this project will involve completing a 10-minute questionnaire and a similar 10-minute questionnaire in July. It will also involve giving your consent for your essay marks to be obtained from the various departments you are enrolled with this year.

The results of the project may be published as part of a Psychology Masters thesis. Only group, or average responses will be published though. You may be assured of the complete confidentiality and anonymity of data gathered in this investigation, as only your student I.D. number is required as a means of matching your successive questionnaire responses and essay marks.

At any stage of this study you have the right to withdraw your participation, including withdrawal of any information you have provided. By completing the questionnaire, however, it will be understood that you have consented to participate in the project.

If you participate in this study, you have the chance of receiving one of the three payments of $25 that is being offered. You will also be sent a brief report near the end of the year, outlining the major findings of the study.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee. The project is being carried out under the direction of Chris Vaughan, who can be contacted at either university (ext.7196) or home (3529246). He will be pleased to discuss any concerns you may have about participation in the project.

If you wish to participate in this study, please complete the following declaration:

I have read and understood the description of this project. On this basis I agree to participate as a subject in the project, and I consent to publication of the results with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the project, including withdrawal of any information that I have provided.

Student I.D. # : ____________________

Signature : ________________________ Date: ________________________

- -

Questionnaire One and Two - Control Group

- -

Thank you for completing this form. All information is confidential. Please answer all questions as honestly as you can.

NOTE: questions are printed on both sides of each sheet.

- -

PART A

Please answer <u>all</u> of the following questions with regard to yourself;

1) Gender - Male / Female **(circle one)** ( )

2) Age - ____ (yrs.) ( )

3) Highest level of education attained before this year -
Undergrad. degree / Bursary / School Certificate / None of these **(circle one)**
( )

4) 'Student status' - Full-time / Part-time **(circle one)** ( )

5) Year of study - 1st year / 2nd year / 3rd year / post-graduate **(circle one)**
( )

6) Courses enrolled in at university this year -

_____

_____

_____

PART B

What do you think are the things you need to know how to do, to be able to write an effective university essay? **(Please list as many things as you can think of in the space provided).**

( )

PART C

Please answer <u>all</u> of the following questions with regard to yourself. (Please answer each question by writing the number you think is most appropriate in the brackets provided using the following scale).

1	2	3	4	5	6	7
Very strongly disagree	Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Very strongly agree

( ) 1) Despite my efforts I have few worthwhile results in the area of essay writing

( ) 2) I sometimes wonder if I have the necessary skills to write an effective essay

( ) 3) I think I would find it difficult to explain to other students the principles of effective essay writing

( ) 4) I understand essay writing techniques well enough to be effective in writing essays

( ) 5) I wonder if I will ever understand how to write effective essays

( ) 6) I find it extremely difficult to write an effective essay

APPENDIX B - A Comparison of Demographic Data Between the Treatment Group Subjects and the Control Group Subjects.

Table 5: A Comparison of Demographic Data Between the Treatment Group Subjects and the Control Group Subjects.

	Treatment Group (N=67)	Control Group (N=21)
Age (yrs)	Mean = 23.06 S.D. = 7.64 Range = 18 - 48	Mean = 21.86 S.D. = 2.28 Range = 17 - 28
Gender	19.4% Male / 80.6% Female	33.3% Male / 66.6% Female
Year at University	First year - 42 (62.7%) Second year - 22 (32.8%) Third year - 3 (4.5%)	First year - 16 (76.2%) Second year - 4 (19.0%) Third year - 1 (4.8%)
Highest Level of Education	Undergrad. degree - 2 (3%) Bursary - 45 (67.2%) School Cert. - 16 (23.8%) None of these - 4 (6.0%)	Undergrad. degree - 1 (4.8%) Bursary - 17 (81.0%) School Cert. - 3 (14.2%) None of these - 0 (0.0%)
Full-time/ Part-time Student	Full-time - 56 (83.6%) Part-time - 11 (16.4%)	Full-time - 19 (90.4%) Part-time - 2 (9.6%)

APPENDIX C - Mailed Invitation to Participate in Study One for Those Students who Enrolled in the WASS Programme.

Room # 712
Psychology Department
University of Canterbury

20 May 1994

Dear Writing and Study Skills student

I am a postgraduate Psychology student at the University of Canterbury. As part of my Psychology Thesis I am evaluating the effectiveness of the Writing and Study Skills Programme in which you are currently enrolled.

I am writing to you in particular, to encourage you to participate in this study. This would involve completing a 15-minute questionnaire during the week of 6-10 June which would be given to you during the first WASS session and a similar 15-minute questionnaire at the completion of the WASS programme. It would also involve giving your consent for me to obtain your essay marks before and after the WASS programme from the various departments you are enrolled with this year. All this information would be completely confidential and anonymous.

If you participate in this study, you have the opportunity of receiving one of three payments of $25 that is being offered - those who receive this payment will be chosen by randomly selecting three participants at the end of the study. You will also be free to withdraw from the study at any point.

This research has the complete support of Carole Acheson (Co-ordinator of the WASS programme) and the Psychology Department. The project has also been reviewed and approved by the University of Canterbury Human Ethics Committee. If you choose to participate in this study, your help

would be greatly appreciated. Please feel free to contact me with regard to any questions you may have, at either University (ext.7196) or home (3529246).

I will be at the first WASS session with the first questionnaire. Until then, I thank you for your consideration of this issue.

Yours sincerely

Chris Vaughan (Mr)

APPENDIX D - Principal Components Analyses of Data from Study Two.

Grid data were analysed by a computer programme called RepGrid (Shaw, 1989). This programme produces a distance-based cluster analysis using standard principal components analysis techniques which can be used to assess the major dimensions along which a person makes distinctions between various aspects of essay writing (Lange, 1992). This type of analysis produces two-dimensional plots of the data points corresponding to elements and constructs. The programme also uses a form of cluster analysis to identify those elements and constructs that are similar to each other. It displays these results together with tree diagrams of the similarities in elements and constructs.

The RepGrid analysis calculates the percentage of variance accounted for by each of the principal components. These preliminary results are shown in Table 6.

Table 6: Mean Percentage of Variance Accounted for by the Three Major Factors in the Essay Writing Grids, Before and After the WASS Programme.

	Factor 1	Factor 2	Factor 3
Main Group (before)	64.45	18.68	8.93
Main Group (after)	55.74	24.83	11.23
Comparison Group (before)	64.93	20.22	6.88
Comparison Group (after)	57.87	22.55	9.98

In the case of the main group before the programme, Factor 1 accounts for between 55.85% and 72.95% of the total variance, M = 64.45, and Factor 2 accounts for between 12.51% and 24.84%, M = 18.68. This group of subjects yields four grids in which the third factor exceeds 10% of the variance. The maximum variance on the third factor is 14.93%, M = 8.93. For the main group after the programme, Factor 1 accounts for between 48.96% and 62.52% of the total variance, M = 55.74, and Factor 2 accounts for between 19.73% and 29.92%, M = 24.83. Five of these ten subjects have significant amounts of variance on the third factor, ranging from 10.30% to 15.3%.

In the case of the comparison group before the programme, Factor 1 accounts for between 52.29% and 77.59% of the total variance, M = 64.93, and Factor 2 accounts for between 3.87% and 38.30%, M = 20.22. This group of subjects yields no grids in which the third factor exceeds 10% of the variance. For the comparison group after the programme, Factor 1 accounts for between 50.28% and 65.46% of the total variance, M = 57.87, and Factor 2 accounts for between 18.91% and 26.18%, M = 22.55. One of these five subjects has significant amounts of variance on the third factor, the exact figure being 13.67%.

A Mann Whitney U test was used to determine whether there was any difference between the main group and the comparison group in terms of the median percentage of variance accounted for by each factor. A nonparametric test of significance was used because there was no a priori basis to assume a normality of distribution of the scores and the sample size was small.

For the first factor before the programme, the calculated value of U=14, Z value=-0.169, probability of Z -0.169=0.8658. Therefore, there was no significant difference in the median percentage of variance accounted for by this factor, between the main and comparison groups. For the first factor after the programme, the calculated value of U=14, Z value=-0.169, probability of Z -0.169=0.8658. Therefore, there was no significant difference in the median percentage of variance accounted for by this factor, between the main and comparison groups.

For the second factor before the programme, the calculated value of U=14, Z value=-0.169, probability of Z -0.169=0.8658. Therefore, there was no significant difference in the median percentage of variance accounted for by this factor, between the main and comparison groups. For the second factor after the programme, the calculated value of U=14, Z value=-0.169, probability of Z -0.169=0.8658. Therefore, there was no significant difference in the median percentage of variance accounted for by this factor, between the main and comparison groups.

For the third factor before the programme, the calculated value of U=11, Z value=-0.676, probability of Z -0.676=0.499. Therefore, there was no significant difference in the median percentage of variance accounted for by this factor, between the main and comparison groups. For the third factor after the programme, the calculated value of U=8, Z value=-1.183, probability of Z -1.183=0.237. Therefore, there was no significant difference in the median percentage of variance accounted for by this factor, between the main and comparison groups.

A reduction in the variance accounted for by the first principal component over the course of the WASS programme would indicate that new themes in the WASS subjects' construct systems were becoming more important in interpreting essay writing (Beck, 1987). Analysis was therefore performed to compare the data from the main and comparison groups, on the change in the median percentage of variance accounted for by the first factor. A Mann Whitney U test was used because again there was no a priori basis to assume a normality of distribution of the scores and the sample size was small. For the first factor, the calculated value of U=10, Z value=-0.845, probability of Z -0.845=0.398. Therefore, there was no significant change in the median percentage of variance accounted for by this factor.

APPENDIX E - Analyses of the Repertory Grids of One Subject from the Main Group of Study Two.

This subject is referred to by the fictitious name of 'Anne'. Tables 7 and 8 present the intercorrelations between Anne's construct ratings, before and after the WASS programme. Tables 9 and 10 present the percentage of variance accounted for by each of Anne's factors, before and after the WASS programme. Tables 11 and 12 present Anne's construct ratings for her elements, before and after the WASS programme. Figures 5 and 6 display a principal components analysis of Anne's grids, before and after the WASS programme.

In repertory grid analyses of the size described in this study, most of the variance is accounted for by the first two factors (Lange, 1992). It is therefore possible to represent the data of individual's succinctly and with acceptable accuracy in the form of composite diagrams according to Slater's (1977) method. Here the first two factors are taken as the horizontal and vertical axes of the graph. The constructs are plotted as angles to the factors and are represented as bipolar points drawn through the intersection of the axes. The elements are plotted as points within this construct space. It is possible to represent the relationship of each element with each construct by simply dropping a perpendicular line from the element point to the construct axis; thus depicting the position of the element along the dimension of the bipolar construct. Such graphs for Anne are shown in Figure 5 and Figure 6. These show the detail that can be gained at an individual level of analyses.

The results can be interpreted as reflecting the way that Anne views essay writing. Initially, some insight into this can be gained from an examination of Anne's elements. This shows that before the WASS programme, re-reading, writing the final copy, overall essay writing and writing the body of the essay were particularly salient negative elements for her, while developing a central argument, analysing the essay topic, writing the introduction and her ideal perception of essay writing were particularly salient positive elements for her. The salient bi-polar constructs that described these elements included "requires a lot of time - requires little time", "hard to express own ideas - easy to present own ideas", "tedious - interesting", "can't express own ideas - enables expression of own ideas" and "not satisfying - satisfying" (see Figure 5). In contrast, after the WASS programme, writing the conclusion and writing the final copy were particularly salient negative elements, while writing the bibliography, analysing the essay topic and her ideal perception of essay writing were particularly salient positive elements for her. The salient constructs that described these elements included "confused about how to do it - know how to do it", "can't express own ideas - satisfying", and "hard - easy" (see Figure 6). Before and after the WASS programme, Anne's ideal essay writing element was viewed as being something she enjoys doing, she knows how to do it, it is satisfying, it is easy and interesting.

The construct intercorrelation results (see Table 7 and Table 8) indicate that the constructs "don't enjoy doing - enjoy doing" and "requires a lot of time/work - requires little time/work" were perhaps more superordinate, as both before and after the programme, each of these constructs contributed

towards one of two 'primary clusters' - a group of constructs which are highly correlated with each of the other constructs (Makhlouf-Norris, Jones & Norris, 1970). The identification of these superordinate constructs is important, as they are the ones which are most closely related to Anne's other constructs, are the most salient and meaningful ones to her, and are also the most resistant to change (Fransella & Bannister, 1977). It is important to note though, that these interpretations are only tentative in nature, as there is no definitive way of determining which constructs are the more superordinate (Phillips, 1989).

RepGrid Output for Anne.

Table 7: Intercorrelations Between Anne's Eleven Construct Ratings Before the Programme.

	Constructs										
	1	2	3	4	5	6	7	8	9	10	11
1	1.00	0.96	0.78	- 0.54	0.07	- 0.30	0.67	0.66	- 0.61	0.13	0.62
2	0.96	1.00	0.88	- 0.48	0.03	- 0.29	0.70	0.73	- 0.64	0.00	0.58
3	0.78	0.88	1.00	- 0.63	0.09	- 0.29	0.73	0.69	- 0.76	0.08	0.44
4	- 0.54	- 0.48	- 0.63	1.00	- 0.58	- 0.19	- 0.66	- 0.06	0.89	- 0.55	- 0.71
5	0.07	0.03	0.09	- 0.58	1.00	0.72	0.07	- 0.46	- 0.47	0.50	0.55
6	- 0.30	- 0.29	- 0.29	- 0.19	0.72	1.00	- 0.11	- 0.62	- 0.13	0.41	0.37
7	0.67	0.70	0.73	- 0.66	0.07	- 0.11	1.00	0.61	- 0.69	0.27	0.71
8	0.66	0.73	0.69	- 0.06	- 0.46	- 0.62	0.61	1.00	- 0.22	- 0.21	0.09
9	- 0.61	- 0.64	- 0.76	0.89	- 0.47	- 0.13	- 0.69	- 0.22	1.00	- 0.32	- 0.71
10	0.13	0.00	0.08	- 0.55	0.50	0.41	0.27	- 0.21	- 0.32	1.00	0.39
11	0.62	0.58	0.44	- 0.71	0.55	0.37	0.71	0.09	- 0.71	0.39	1.00

Table 8: Intercorrelations Between Anne's Eight Construct Ratings After the Programme.

	Constructs							
	1	2	3	4	5	6	7	8
1	1.00	0.14	0.93	- 0.23	- 0.01	0.73	- 0.64	- 0.03
2	0.14	1.00	0.14	0.29	0.91	- 0.14	0.26	0.78
3	0.93	0.14	1.00	- 0.34	- 0.06	0.75	- 0.67	- 0.17
4	- 0.23	0.29	- 0.34	1.00	0.35	- 0.64	0.19	0.62
5	- 0.01	0.91	- 0.06	0.35	1.00	- 0.13	0.33	0.84
6	0.73	- 0.14	0.75	- 0.64	- 0.13	1.00	- 0.54	- 0.29
7	- 0.64	0.26	- 0.67	0.19	0.33	- 0.54	1.00	0.32
8	- 0.03	0.78	- 0.17	0.62	0.84	- 0.29	0.32	1.00

Table 9: The Percentage of Variance Accounted for by Each of Anne's Factors Before the Programme

Factor	1	2	3	4	5	6	7
% Var.	49.34	28.66	8.32	5.01	3.83	2.45	1.34

Table 10: The Percentage of Variance Accounted for by Each of Anne's Factors After the Programme

Factor	1	2	3	4	5	6	7
% Var.	46.20	35.28	9.66	3.57	3.41	1.10	0.60

Table 11: Anne's Construct Ratings for Her Twelve Essay Writing Aspects Before the WASS Programme.

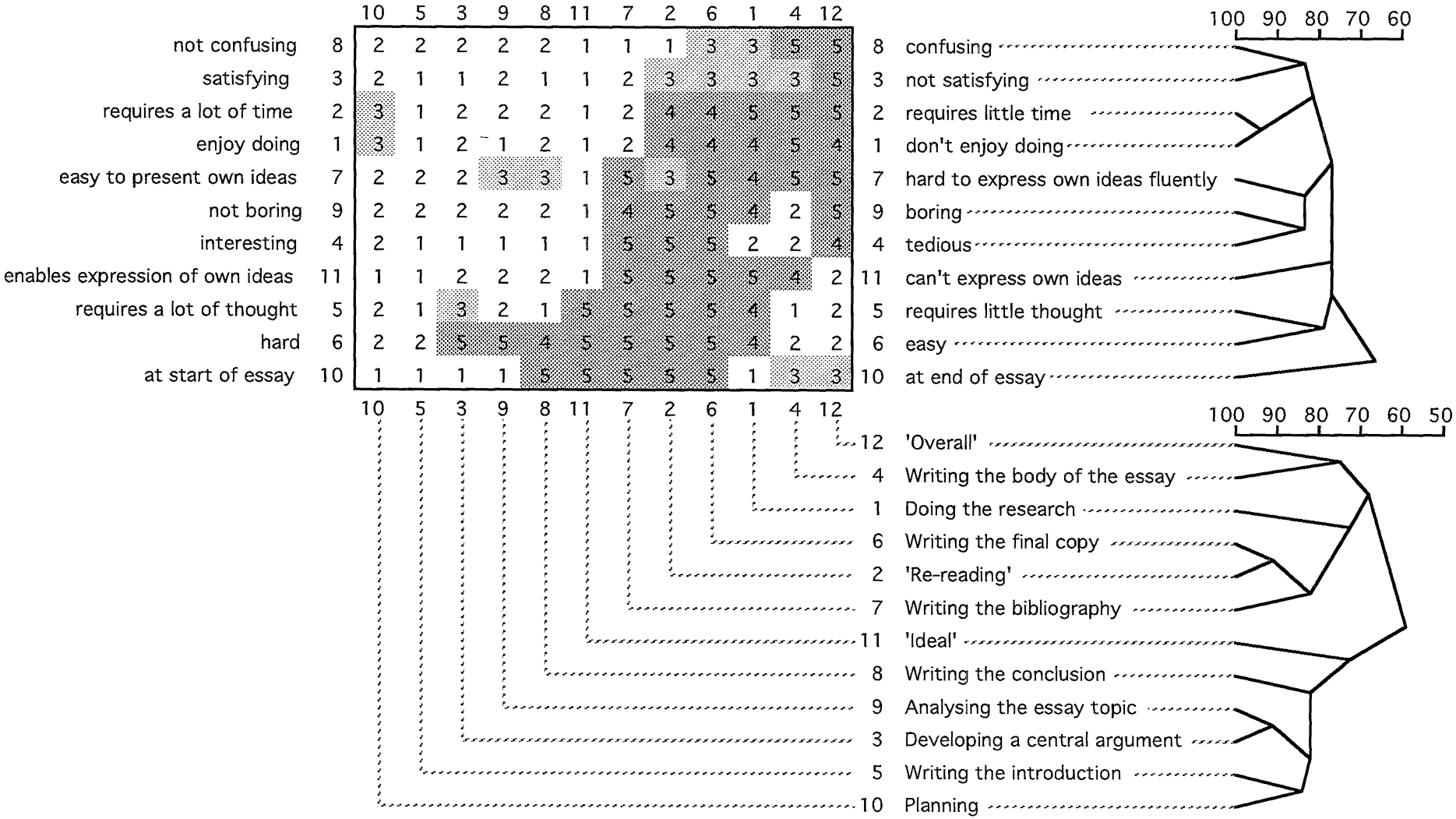
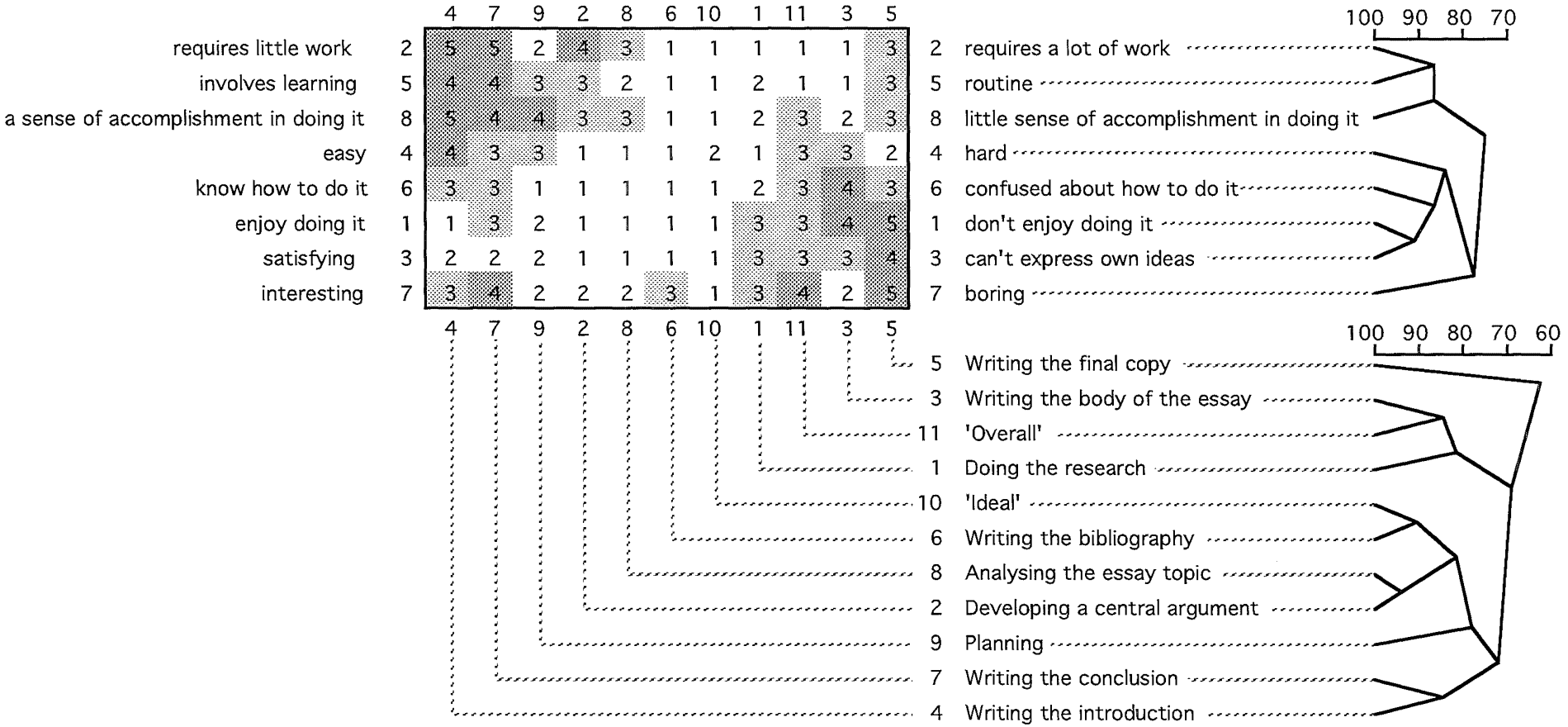


Table 12: Anne's Construct Ratings for Her Eleven Essay Writing Aspects After the WASS Programme.



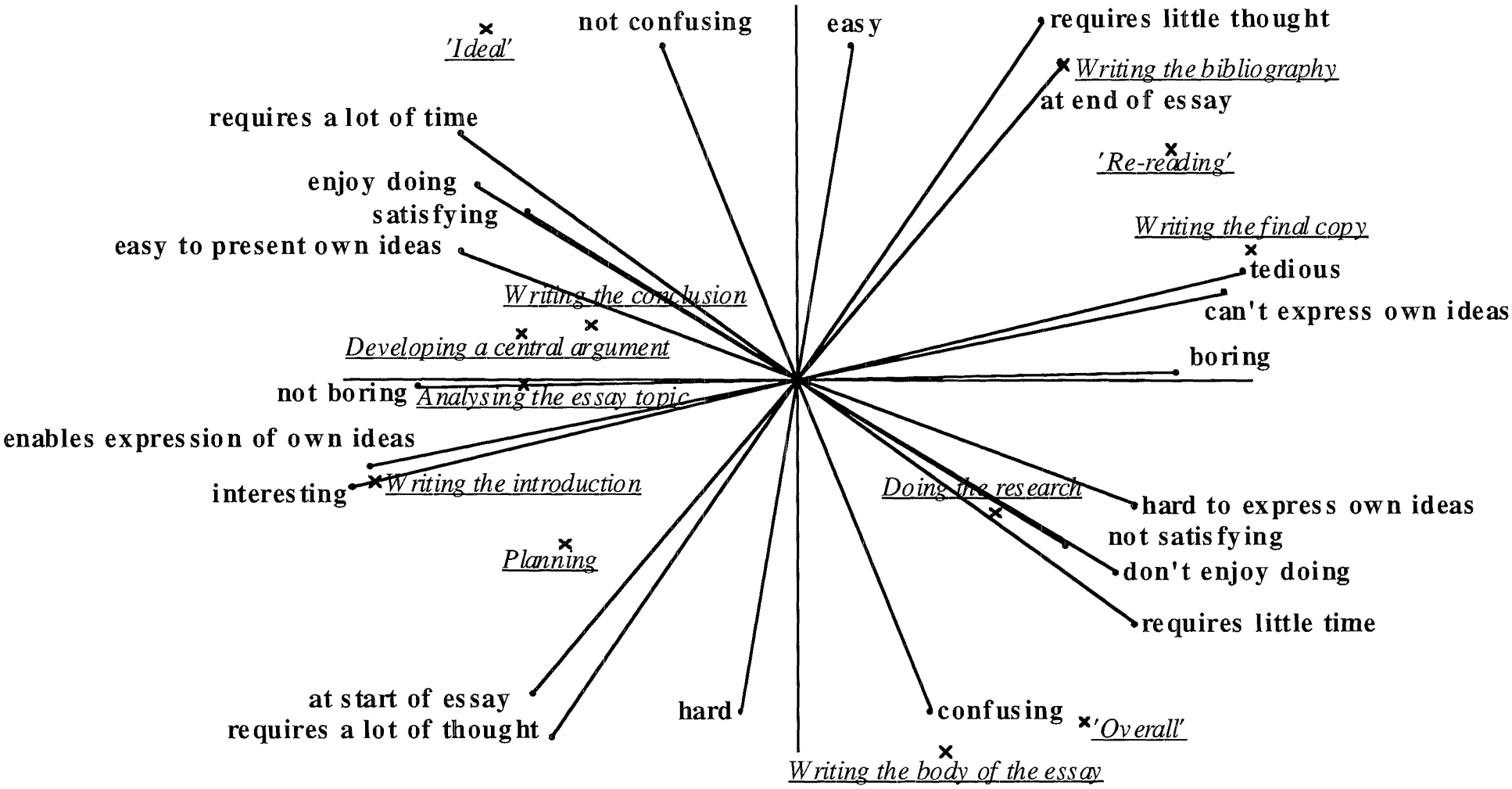


Figure 5: Principal Components Analysis of Anne's Grid Before the WASS Programme

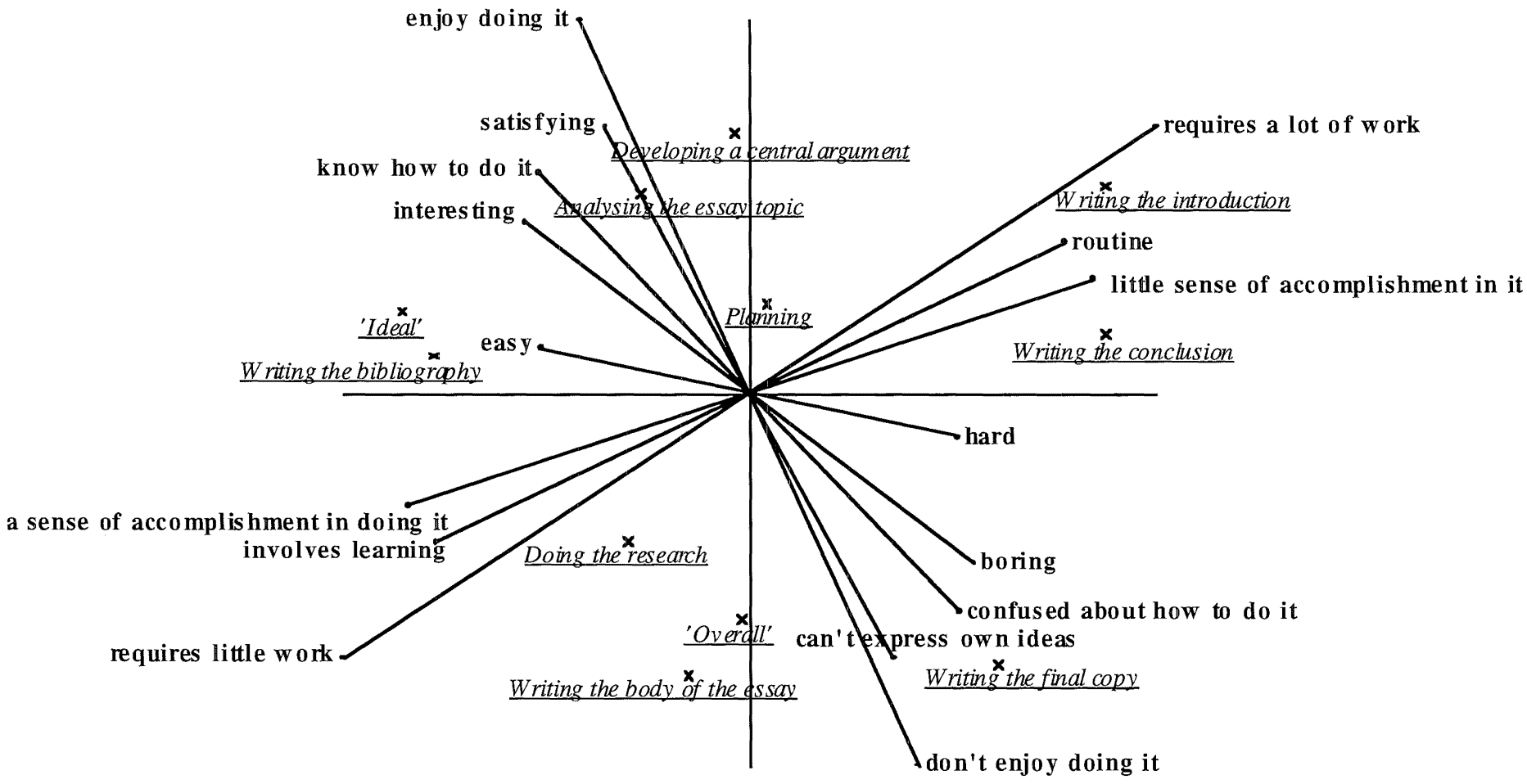


Figure 6: Principal Components Analysis of Anne's Grid After the WASS Programme